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ABSTRACT

Six instructional units offer guidance in the process of writing printed educational materials. Each unit provides objectives, writing exercises and activities, and end-of-unit discussion questions. Unit 1 considers the first steps in writing, emphasizing the importance of varying instruction according to student needs and background and discussing how people learn. Active learning and different types of learning activities are then examined in the second unit. The third addresses ways of improving a presentation, such as writing in an appropriate style; using clear, simple language; and trying alternative presentation forms, such as pictures and diagrams. Unit 4 covers all steps of production and starts students on an individual project to produce materials in their own subject. Four stages of systematic planning are covered: identifying a need, formulating objectives, listing resources and constraints, and preparing an outline plan. Unit 5 emphasizes specific instructional writing skills with advice on distinguishing between different kinds of instructional materials, what to include and how to organize it, and writing correspondence units. The final unit outlines processes of editing, piloting, reproducing materials, administration, tutoring, and evaluation. Four supplements provide additional information on learning theories, behavioral objectives, media, and readability and layout. (LMM)

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WRITING FOR DISTANCE EDUCATION

A manual for writers of distance teaching texts and independent study materials

International Extension College 1979

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The International Extension College

The International Extension College exists to provide information and advice on distance teaching: the combined use of printed matter - usually correspondence courses - broadcasting and face-to-face tuition. The College is particularly interested in the use of these techniques for nonformal education. It is a nonprofit organisation registered as a charity under British Law.

IEC has worked with the governments and universities of third world countries in providing information, advice, training and staff for distance teaching projects. At the request of the governments concerned it has started colleges in Mauritius (the Mauritius College of the Air) Botswana (Botswana Extension College) and Lesotho (Lesotho Distance Teaching Centre) and has worked with the University of Lagos in setting up their Correspondence and Open Studies Unit.

But most of this activity is recent, and the literature on distance teaching is scanty and often difficult to find. As a result educators planning to use correspondence and broadcast teaching have little chance of benefiting from the experience of others who have already faced their problems. Inevitably work is being duplicated and mistakes repeated which could have been avoided. IEC aims to help remedy this situation by helping to set up colleges, by providing a resource and information centre, and by offering support, consultancy and training services to existing correspondence and adult education agencies overseas.

The College has links with the National Extension College and with the Department of Education in Developing Countries of London University Institute of Education.

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A samples file is bound separately

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We are grateful also to the institutions who have let us use examples from their publications in the Samples Booklet.

Introduction

This manual is addressed to those with experience of teaching face-to-face who now wish to extend their skills to the preparation of printed educational materials. Our intention is to show you how the skills you have acquired in your previous work can be applied to the new task of writing for 'distant' learners: people you may never meet in person.

We assume that the educational materials you will want to prepare will probably include one or more of the following:

- reading materials for new literates;
- correspondence courses at the equivalent of primary or secondary level;
- specialised courses for professional, vocational or skills training;
- instructional booklets and other materials designed to help people to make better use of the limited resources available to them;
- materials for university extension studies.

Our aim is to help you prepare such materials, appropriate to the educational level of those who will use them.

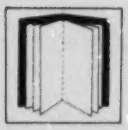
This manual will <u>not</u> be concerned directly with other educational media, nor with the writing of textbooks, nor with materials for teaching literacy. All of these require a set of skills somewhat different from those needed for the preparation of the sorts of materials listed above. But the basic principles of design apply whatever media are used, and for whatever purpose. So we hope that this manual will prove useful not only to those about to embark on writing instructional materials, but also to others who work in distance education, including editors and broadcasting production staff.

We have tried to design this manual so that it can be used in a range of different situations. In particular we hope that it will meet the needs both of a new distance teaching institution which has just recruited staff to prepare its first courses, and of the individual writer joining an established organisation which may or may not already be providing distance education materials.

How to work through this book

The material in this manual is divided into six parts which we term 'units'. As you start each new unit we suggest that you begin by reading the objectives and then skim quickly through the rest of the text. This will give you an idea of the ground to be covered and the kinds of activities you will be expected to complete. Then work slowly through the unit doing the written exercises and referring to the samples as indicated. Each unit will probably take several hours. Don't try to work through a whole unit without stopping. It is generally better to take a short break after an hour or so. When you come to the end of a unit you will find a section outlining Questions for Discussion. Before you look at these however you should look back through the unit. This section is intended primarily for those working in groups, however students working on their own should also look at the questions and discuss them with their course editor or the equivalent person at the distance teaching organisation to which they are attached.

As you work through the manual you will be asked to complete various activities ranging from questions to be thought about or discussed to exercises involving the writing and preparation of draft lessons. Instructions will be given in the text suggesting possible approaches or ways of looking at a question and you will also find symbols in the left-hand margin of the page indicating the kind of activity which is included in the unit you are working through. Below you will find a list of the symbols which have been used in the text together with an explanation.



SAMPLE

You will find this symbol used when we want you to look at an example contained in the Samples booklet. Samples are extracts from distance teaching materials prepared by many different organisations. The manual will refer to individual samples which illustrate a particular point. Details of why each sample has been chosen are also included with the individual examples.

SUPPLEMENT

This symbol refers you to the Supplements which are printed at the end of this manual. These explore in greater detail a variety of topics covered fairly briefly in the text. Read them when the manual suggests, if you want to know more about a particular topic.

WRITING

This indicates a specific writing activity which you should complete; it could mean jotting down a few ideas, writing a list or doing a specific written exercise. The major written exercises are also boxed.

QUESTION

This symbol is used when we want you to stop for a moment and think about a particular point. It also refers to questions you should ask yourself before beginning a written exercise.

CHECKING

We have used this symbol when we want you to check through something, either a piece of work that you have just written or list of points to be considered in the text.

The only materials you will need before starting work on the manual will be a pen and some paper. You will probably find it useful also to have a file in which to keep your written work as you will occasionally need to refer back to what you wrote earlier.

One final point needs to be stressed before you start on unit 1. Writing for distance education may not come easily at first. Many new writers find it hard to get started, and lack confidence in their ability. Unfortunately there are no simple rules to tell you what to do.

Writers develop their skills by trial and error, by careful supervision from others more experienced, and by drawing on their own past experience. The acquisition of writing skills demands learning by doing. That is why we have tried to make this manual a practical one from the start. So it is important to try all the exercises, even if you are not very confident of your ability. Confidence and ability will develop as you work through the manual.

UNIT 1: First steps

1. Objectives

In this unit you will begin to extend your own teaching experience to the context of distance education. You will do this by:

1.1 writing a short passage;

1.2 considering how people learn and how teachers help them to learn;

1.3 listing some of the similarities and differences between face-to-face and distance teaching.

2. Some preliminary considerations

Imagine that you are an experienced nutrition educator, and that you are about to conduct a class in nutrition. But this class, unlike the ones you normally give, is to be presented in print, and students will be following it in their own homes, or in study centres or meeting-places, under the leadership not of yourself but of a group leader or supervisor who is equipped with little more knowledge than other students.

How will you convey your knowledge to them in this unfamilar way? How different will your written class be from the one you are accustomed to conducting face-to-face? What features will be common to both? In units 1-3 of this handbook, we will attempt to help you answer these questions.

We think your first step should be a practical one. In a moment we will ask you to write a short passage on a given subject. What you write will probably be rough and imperfect, but it will be a start. As you read on, you will be able to revise and improve it. By the end of unit 3 you will have written a second version. By comparing this with your first attempt you will be able to judge how much you have learnt. In doing so, we hope you will see what the essential features of writing for 'distant' learners are. Later you will be able to apply this understanding to your own particular writing task.

Before we come to this exercise, we should explain one or two points. Firstly, why are we asking you to write at this stage, before explaining how to do it? The answer is that trying it out is really the only way to learn - trying it out and then analysing how it could be improved, and then trying it again. Secondly, what are you going to write about, and why? The subject we have chosen is nutrition - it's something everyone knows a little about already, and it has the added advantage that it can be approached at several different levels. We will provide you with the specialist information you might need to do this. But if you feel uncomfortable about tackling this

topic, you are of course at liberty to choose to write about another subject.

3. Writing a short passage

3.1 Who are the students?

As you start the exercise, you will probably soon realise that what you write and how you write depends very largely on who you are writing for. You may already have a clear idea of who you are writing for, but it may be helpful if we set the scene for you further. Consider these three cases:

Rural women: you are working on a project which aims to train rural women in practical skills and improve the general standard of health of members of their families. You should assume that a majority of the women are illiterate. You will write in the first place for the minority who can read but your intention is that this information will be passed on by word of mouth to the others. You should also assume that many children are poorly nourished and that only locally-produced foodstuffs are available.

Agricultural extension agents: you are helping to prepare training materials for agricultural extension agents. In their course they will learn about improved agricultural methods, and about how to communicate these to villagers. Your job is to teach them how to help community health by encouraging villagers to produce more and better food for home consumption.

Adult correspondence students: you are writing a correspondence course in human biology which will prepare adult students for secondary-equivalent examinations. These students will have had complete primary education but will probably not have experience of studying on their own. They will be interested in the content of the course, but also very much concerned with getting through the exam.

3.2 Different students have different needs

One topic which will be common to all three courses is the nutritional value of different foods, and that is what you are going to write about shortly. The first thing you should do however is consider how far the readership will affect the way you write. Then you should decide which of the three groups you will write for.

In what way do you think your course will be written differently from the other two?

EXERCISE A

Write 1-3 pages of a text entitled 'The nutritional values of the food we eat', or on another topic of your choice.

Use the information on pages 9-11 to help you write the exercise. Don't just aim at turning parts of this into a piece of prose. Instead, approach the exercise this way:

- first, work out what you think your readers need to know

- secondly, write this up in your own way. Use the information on pages 9-11 as and when it fits into your text.
- write so that your readers will be able to understand it easily, and so that they will be able to apply what they have learned.

Keep your finished work in a file, as suggested earlier.

3.3 The difference between face-to-face and distance teaching

You should by now be beginning to see some of the similarities and differences between face-to-face and distance teaching. You could start to compile a list, which you can add to as you work through this manual.

If you are one of several people about to embark on writing distance teaching materials, you could do this together as a group exercise. If you are working on your own, you could get additional ideas by talking to people with first-hand experience of different aspects of these two forms of teaching. For example, perhaps you know someone who is currently following a correspondence course?

Here is an example of how you might begin:

similarities	differences
In both cases, you need to attune your teaching to the needs of the learner	The teacher isn't available to deal with queries or problems of distant learners on the spot.

Can you add to this list now?

In order to go further into this question, we need to look briefly at the processes by which people learn. In doing this, you should all the time be aware of your own experiences as a teacher, and your own understanding of how teachers help learning. A lot of research has been conducted into learning processes - we cannot do more here than briefly summarise parts of it. If you want to go into this topic more deeply refer to Supplement 1, Learning theories.

The Composition of Some Foods

Raw food	Calories per 100 g	Protein g per 100 g	Carbohydrate g per 100 g	Fat g per 100 g
Beef	183	17.5	12.5	-
Cabbage	25	1.6	5.7	0.1
Cassava	146	1.2	34.7	0.3
Cow's milk	65	3.5	5.0	3.5
Dark green leaves	41	5.0	6.5	0.7
Eggs	163	12.4	0.9	11.7
Fresh fish	104	19.0	-	2.5
Ground nuts	546	25.6	23.4	43.3
Kidney beans	336	23.1	59.4	1.7
Maize	356	9.5	72.9	4.3
Potato	82	2.0	18.9	0.1
Soya Beans	335	38.5	31.3	18.0

Food groups and their functions

Name	Function	Foods in which found	Effect of deficiency	Remarks
1. Proteins	Body building foods: used in building of new cells for growth and replacement of tissues.	Meat, fish, eggs, cheese, milk, bread, beans, groundnuts.	Extreme result of deprivation is protein-deficiency malnutrition (Kwashiorkor).	1. Proteins consist of 23 amino-acids in various combinations. The body needs all of these, therefore proteins should be taken from several sources to provide balance. 2. Some amino-acids are produced by the body, others need to be supplied in our food. Generally, animal proteins supply us with more of the essential amino-acids than vegetable proteins. 3. Average daily requirement for an adult man is 60 grams; for pregnant and lactating mothers twice that amount.
2. Carbohydrates and fats	Energy-giving foods: provide fuel for the body to use up in order to function	Carbohydrates: Sugar, flour, rice, potatoes, peas, cassava, millet, maize. Fats: butter, cheese, fatty meat, nuts, oil.	Wasting, listlessness	Fats are a better source of energy than carbohydrates as the latter are more bulky.

3. Vitamins & Minerals	Protective foods:			
Calcium	- forming bones, teeth, nails	milk,eggs,green veg.	rickets	
Iron	- making red blood corpuscles	green veg., meat	anaemia	
Iodine	- helps thyroid gland to function	fish, iodised salt	goitre	
Vitamin A	- contributes to eyes, skin and resistance to disease.	green veg.,fish,liver, oils,carrots, milk.	reduced resistance to disease dry skin poor vision	Lack of Vitamin A can lead to xeropthalmia (blindness caused by damage to cornea) especially in malnourished children.
B_1 (Thiamine)	Helps appetite and digestion	yeast,wheat,embryo, pig's liver,rice husks	fatigue,wasting, loss of appetite, beri-beri.	1. destroyed by heat 2. in countries where rice is the staple food, polished rice may lead to deficiency diseases
B_2	Health of skin	milk,meat,green veg.	dermatitis, nervous disorders, including pellagra.	1. B_2 includes 9 different vitamins. 2. Maize is deficient in some of these.
C (ascorbic acid)	Healthy skin,healing of wounds	citrus fruits,tomatoes, nuts,fresh vegetables.	skin disorders, poor healing of wounds, leading to scurvy.	Cooking reduces the amount of vitamin C.
D	Formation of bones	Cod-liver oil, oil, cream.	rickets.	People in hot climates are unlikely to suffer from this as sunlight helps the body to form its own Vitamin D.

4. Helping people to learn

Experts differ about precisely what learning entails. But for present purposes it is enough to consider three aspects of learning: *acquiring information, understanding it, and applying it in practice.* In fact it is almost always impossible to dissociate these three aspects from one another, but it is helpful here to consider them separately.

4.1 Acquiring information

This is a relatively mechanical process, yet the barriers which surround it can sometimes be considerable. It is difficult to absorb information which is unclear or ambiguous, which uses terms you don't fully understand, or which relies on skills or knowledge you don't yet possess. Another barrier arises when information is presented in a disorganised way so that the learner cannot see what direction it is taking him in. Similarly, if he cannot see that the information is meaningful and useful to him, he is likely to discard it. A further important barrier may be the attitude of the learner. Generally, people don't learn unless they are willing to accept the information presented to them.

How can the teacher help people to assimilate information?

- firstly, the teacher must understand what his students' skills and needs are, and then choose an appropriate way of presenting the information;
- secondly, he needs to arrange the information in a logical sequence so that each part of the sequence is related to others, with no irrelevant facts interfering. In this way the facts as a whole are easier to absorb;
- thirdly, he should encourage learners actively to repeat the information which is presented, in order to reinforce it in their minds.

Distant learners are at a disadvantage here, as the barriers mentioned above are so much more difficult to overcome under these circumstances. If the text isn't clear, the learner may not have anyone to turn to for help. Without the presence of a teacher or guide, it's easy to get distracted, or to feel lonely and discouraged.

We can find solutions to some of these problems, though they are not always easy to implement. For example, using simple language should help to limit misunderstanding. If, without losing simplicity, a lively style of writing can be adopted, this should help to motivate and encourage the learner. This will be discussed further in later units.

You already have at least some idea of the kinds of people you will be writing for when you have finished working through this manual. What do you think will be the most serious barriers they will face in trying to acquire information?

4.2 Understanding

Understanding represents what we might call 'higher level learning'. It involves making connections between facts and interpreting them in the light of our experiences and needs. The teacher's role here is, firstly, to ensure that the necessary facts and skills are there, and secondly, to help learners make connections between the facts.

The techniques teachers develop for helping learners to understand are many and varied. One useful approach, for example, is to present the same information in varied ways and from different points of view. Teachers often stress that in order to teach effectively they must work themselves into the cultural and psychological perspectives of the learners, by learning from their own modes of self-expression. Another type of approach is that characteristically adopted in programmed learning, in which learning proceeds in very small, carefully graded steps, each step taking knowledge slightly further forward through the active participation of the learners.

In writing for distant learners, you cannot know as much about those who will use your materials as the classroom teacher does about those who attend his lessons. Nevertheless, with careful research, much can be learned in advance about who your learners are likely to be. Even so, the materials you write will inevitably have to be geared to the needs of the majority of those who will want to use them.

In your experience, which parts of your subject are the most difficult for learners to understand? What do you think makes them difficult? When you used face-to-face methods, how did you help people to understand these difficult topics?

4.3 Application in practice

All learning should be functional in one way or another; this is not only desirable, it is also a practical necessity. Generally speaking, learners (especially adults) have little motivation to learn unless the information and insights gained can be used. This is just as true of a practical subject like motor mechanics, where the aim is to acquire a particular set of skills, as it is of a more academic study such as history in which we seek to throw light on the workings of our own society today by understanding those of the past.

Moreover, people can assimilate new knowledge more easily and effectively if they have the chance to practise using it as they go. The active element in learning is of great importance and will be dealt with in detail in unit 2.

For the present it is enough to point out that almost all face-to-face teaching involves some sort of active participation by learners. In practical subjects like weaving or agriculture it is obvious what this activity might be; in more bookish subjects, too, some form of activity usually takes place. This might take the form of written exercises, discussions or taking notes. In teaching <u>any</u> subject at a distance however, there is a real danger that students will receive <u>passively</u> the printed materials or radio broadcasts, and that their learning will be

less effective as a result. This is perhaps the most important danger to avoid in writing distance teaching materials.

In practice, of course, it is often impossible to disentangle the different strands which contribute to the overall pattern of learning. Yet it is important to try to analyse learning needs in this way, in order to ensure that a proper balance is maintained. Think of the three groups of potential students identified on page 7 above. The first group, the rural women, need primarily to be able to make positive changes in the diets of their families, but to do this they must understand why the changes are needed. The second group, the agricultural extension agents, need factual information about farming, but they also need to understand how farming contributes to the community's health. The human biology students of the third group may already understand a good deal about nutrition from their own experience and previous learning, but they need help to assimilate a mass of facts and figures, and to retain these in their memories. So the exact balance varies from one group of learners to another. Although one aspect or another may figure most importantly, you will help people to learn more effectively if you make sure that you have included a suitable balance of facts, concepts and practice.

5. Some points to consider

Returning now to the text you have just written, think about the following questions:

1. What do you assume is the practical purpose behind the passage?
2. Does your text reflect this purpose adequately?
3. Mark off the places where you have included straight information, where you have tried to interpret it, and where you have demonstrated how it can be applied in practice. Which of the three aspects of learning has your text stressed?
4. Do you now think this is the right balance?
5. Can you now see ways of improving the text?

6. Summary

In this first unit you started a trial draft of a distance teaching passage. In examining this we saw that:

- what you include, and how you write it, varies according to who you write it for;
- people learn through a combination of acquiring information, interpreting it and putting it into practice;
- people learn in this way in both face-to-face and

distance teaching. But in distance teaching we must guard against 3 main dangers for the learner:

* isolation and lack of motivation;
* lack of communication with tutors and fellow learners;
* passivity.

7. QUESTIONS FOR DISCUSSION

If you are one of a group of writers working through this manual you will probably find it useful to circulate the passages you have written. However, in deciding about this, respect the feelings of those who may prefer to have more practice before showing their work to others. Groups should discuss all the questions below.

If you are working on your own, you should ignore question 2. Discuss the exercise you wrote earlier in this unit, and questions 1, 3 and 4 with your course editor or the equivalent person at the institution for which you will be preparing educational materials.

1. What difficulties did you find when doing the written exercise? Did these difficulties arise because you didn't understand the purpose of the exercise, or because you are new to distance teaching, or for some other reason?

2. Is there anything noticeably different about those passages written for rural women, those for agricultural agents, and those for adult correspondence students? Are these the differences you would have expected?

3. We have identified some of the main difficulties involved in distance education. Discuss these, and how they might be overcome, in relation to the people for whom you will soon be writing materials.

4. We suggested earlier that face-to-face and distance teaching have some things in common. Discuss how far this is true in relation to:
   * the influence of examining bodies on what is taught and how it is presented;
   * the need to stimulate the student's active involvement in the learning process.

UNIT 2: Active learning

1. Objectives

Your main objective in this unit is to work out a lesson outline, based on learning activities, for the exercise begun in unit 1. As preparation for this, you will

1.1 understand why active learning is important in distance education;

1.2 look at examples, taken from existing materials, of different sorts of learning activity;

1.3 consider what activities you want learners to do in your trial lesson.

2. The importance of active learning

Reading a printed book (or listening to a radio programme) is normally a passive occupation. We take in the words, but they do not require us to make any response. Yet we know, both from experience and from research findings, that making a response is an essential part of learning. It helps us to understand and retain what we read or hear partly through repetition, partly from the encouragement we get when we discover we have actually learnt something, and partly by helping us to assess our progress and identify weak spots.

2.1 What form does active learning take?

Active learning may take many different forms. We may do no more than stop and think for a moment, making connections in our minds with things we already know. In a face-to-face situation, our teacher may ask us to answer a question, take notes on his lecture, observe and record an experiment or demonstration, or do a quick calculation, and we would regard these activities as a natural part of his lesson. But in distance education, which uses the more passive printed and broadcast media, the responses need to be built in deliberately and with care. In this unit, we shall be discussing ways of doing just that.

First, look back to the passage you wrote at the start of unit 1. Check through it to see how many times you introduced an activity into the text (i.e. how many times did you ask readers to do something?). Did you introduce an activity at several different places, or just at the end of the passage?

3. What sorts of activity?

Activity as an aid to learning may involve one or more of three things: *thinking, writing and doing.* In this section we will be considering examples taken from the samples booklet. Have this ready and be prepared to spend some time examining the samples.

3.1 Thinking

We saw in unit 1 that learning partly involves interpreting facts and making connections between them. This is a mental activity which can be stimulated by distance teaching texts. One way of doing this is through the use of questions, often forming headings such as the one above. Questions help to keep readers alert: they direct attention to what follows, and encourage readers to stop and consider before reading on. Sample 21, for example, shows a heading in question form and further questions in the text below it.

Some questions are designed to make the reader draw on his own personal resources. There are no 'right' answers to such questions. They are meant not to test memory but to encourage the reader to pause for a moment and reflect. The exercise at the bottom of sample 1 in the booklet is an example of this type of question. The exercise in sample 2 is another sort of 'thinking' activity.

3.2 Writing

Practical courses for illiterate or barely literate people clearly don't need to include writing activities. In other courses, written exercises are very important in helping the distant learner to consolidate what he has just read. We know that the simple act of copying something can help to fix it in the memory. Writing things down also keeps students active; it forces them to work out answers to questions properly, rather than to skim lazily over them.

Written exercises may be of several sorts:

- copying, or writing from memory, the teaching point which has just been made. Very little effort is required here; it is simply a way of strengthening the memory by repetition;
- answering questions which involve extending what has just been learnt to other items in the same category, e.g. practising a verb-formation or an arithmetical process;
- applying what has just been learnt to a new situation, e.g. making comparisons between one period in history and another, applying a book-keeping procedure to an imaginary account;
- applying what has just been learnt to one's own situation or experience ('Can you think of any more examples of ...?');
- answering questions designed to test comprehension, i.e. exercises in understanding and using words and ideas.

There are probably other sorts of activity that you can add.

Look carefully through samples 1-7. Can you identify at least one example of each of the above types of written exercise?

Writers often misjudge the level of difficulty required in such questions. Where there is no one on hand to give additional help, activities for distant learners need to be geared to the level of the least able. The main aims of these activities are to provide reinforcement of information which readers have just learned, and to give practice in using it. Thus very simple exercises such as copying a new word, can be appropriate in many circumstances.

A related point is that some exercises which are simple in form, may nevertheless require considerable thought. Look, for example, at samples involving the filling of gaps in sentences (sample 7), marking one's agreement or disagreement with a set of statements by putting an X in the appropriate column (sample 8), or noting with a letter in a box which are the correct answers to a series of multiple choice questions (sample 9). They may appear simple but the thinking involved may be quite complex. Such exercises are suitable for adults whose understanding is considerable but whose experience of writing connected prose is limited. More difficult exercises might include answering questions in one or more sentences, or describing experiments or observations which the student has carried out (see samples 11 and 12 and the study questions at the end of sample 5). Generally speaking, essay-type questions are unnecessary and inappropriate below the level of higher secondary examinations. The exercise should never be so difficult to perform that it discourages learners from attempting it even if they have the necessary knowledge. Remember that in a face-to-face situation students can always seek clarification if they don't understand how to do something; 'distant' students don't have this opportunity.

Activities of this sort provide a constant check for the independent learner on his progress. However, this very important function is lost unless the text also provides him with an indication of how well he has done. Whenever questions are asked to which there are definite answers, these answers must be given. The answers might be printed at the back of the volume, at the end of the lesson, at the bottom of the page, on the next page, or inverted under a space for the student's own answer (see samples 3 and 10). Moreover, the student must be given some sort of help in case his answer is wrong - a reference back to the relevant page, or a hint about how to start off a calculation, perhaps (see samples 14 and 15). Of course, some activities require students to think about their own individual experience, and in such cases no right answers can be given.

From time to time, usually at the end of a lesson unit, work done by students will be submitted for marking and comment by tutors. These assignments follow the same form and function as outlined above. They have two added functions:

- firstly, they open up the possibility of a genuine interaction between the student and the tutor who is responsible for guiding him through the course, and who comes closest to acting as 'teacher' to him;

secondly, they provide feedback to the course writers and producers about the progress of individual students and about the suitability of the course material.

There is no reason why assignment questions should be more demanding than the 'self-assessment' questions found in the body of the lesson. The main function of assignment questions is to check that readers have indeed grasped the lesson, so that even a simple exercise will do if it is markable and if it reflects the knowledge which the student has just acquired. Sample 16 shows an example of an assignment question which tests students' understanding of the lesson.

3.3 Doing

Some instructional material is aimed at improving the learners' skills, or introducing new ones. A correspondence course on how to use a slide rule, a booklet on first aid procedures, a manual on stocktaking for store managers or a guide for motor mechanics - these are all examples of materials which centre on practical activities, and in which the aim is to teach specific skills. Under this heading we are also referring to the more practical sections of academic courses, in which various skills need to be taught in addition to the actual subject-matter. Topics of this sort would include, for example, experiments in science courses, essay-writing skills in advanced academic courses in arts subjects, map-reading for geography, and study techniques for all academic subjects.

Getting across practical instruction through printed materials is notoriously difficult. You will know this only too well if you have ever had to struggle with a new and strange piece of machinery and the manufacturer's instructions are inadequate. You will appreciate why many students give up studying because they just can't see what they should be doing next. Many educators simply never try to carry out practical subjects through print, convinced that it can never work. In our experience, it can work, though it works very much better if people can be organised into studying in groups, with or without a trained instructor.

In your own situation, how far will you need to train in practical skills through the materials you produce? What difficulties do you foresee?

In order to overcomes these difficulties, there are several points you need to bear in mind:

- first explain what equipment is needed, if any, and mention any special skills which are necessary too;
- break up the activity into small steps, and explain each of them carefully;
- put yourself in the learners' place, trying to foresee what difficulties <u>they</u> will find;
- do not try to include unnecessary bits of background, however interesting they may be to you;

- include as much information as will be helpful - no more, no less;
- describe what you expect will happen (though this may not always be right - for example in a science course, you may want to withhold the results of experiments in order to make sure that students find out for themselves);
- describe any problems that might arise, and what to do about them;
- try following your own instructions, or get someone else to.

Another look at the samples booklet will illustrate how this works. Samples 17 and 18 show step-by-step accounts of practical tasks. The clear explanations are aided by illustrations. Sample 19 is an example of study guidance in an academic course; sample 20 illustrates instructions given in a printed study guide for using other elements in the course.

4. Starting to plan a lesson

We are now going to return to the lesson on nutrition which you began in unit 1. Keep your first draft filed away; in this unit and in unit 3 you will be working on a second draft which you can compare with your first later.

4.1 Deciding on your lesson content

Before planning the outline of your lesson, you need to consider:

- how much your target students will need to learn about nutrition in general;
- how much of this ground can be conveniently covered in a first lesson.

4.2 What students want to know

The three groups might aim to learn the following:

learners	their aims
Rural women	to provide meals which will be better for the health of members of their family, without spending more money
Agricultural extension agents	to advise people on how to produce more and better food for home consumption
Adult correspondence students	to understand what the different foods we eat contain, and how these contribute to the proper functioning of our bodies

While these aims look very different, there is, in fact, quite a lot of common ground:

- all students need to learn to classify foods into groups;

- all students need to learn how each group of foods is important for our health;
- all students need to understand the importance of a balanced diet.

Whichever group you are going to write for, these items will have to form part of the nutrition section of the course. However, you might not want to deal with all of them in the first lesson.

4.3 Some special requirements of each group

Rural women will be concerned with the cost and availability of foods. The lesson should not give much space, if any, to foods which these women do not have the means to acquire or which are unacceptable to them for cultural reasons. Cooking methods may also be relevant. For example, if green vegetables are overcooked they lose much of their nutritional value. Factors such as these probably need to be borne in mind right from the beginning.

Agricultural extension agents will already be familar with the farming calendar. In learning of the value of different crops, they will want, ultimately, to be able to advise on planting times so that, as far as the climate permits, people should have a range of vegetables available to them throughout the year. You may not find it necessary to deal with any of this in a first lesson on nutrition for this group.

Adult correspondence students will want, ultimately, to pass an exam in human biology. The syllabus will probably demand a knowledge of the value of various foodstuffs rarely if ever consumed by those who will follow the course. It may also demand a knowledge of certain diseases resulting from diet deficiency of which the students will have no first-hand knowledge.

Can you think of any more special requirements of the group for whom you are going to write?

4.4 A provisional outline

You could now begin a provisional outline of your lesson. Take a large sheet of paper and write 'text' on the top left-hand side and 'activity' on the top right-hand side. Under 'text' list in a few words the main items to be covered in the lesson. Leave plenty of space between each item so that you can change the order or add extra topics as you continue to plan your lesson. Your provisional outline should look something like the one on the opposite page. However, you will probably want to include one or two additional topics of special relevance to your group. You may also feel that some of the items would be better left for a later lesson. You are the person who must make the decisions. However, please leave the space under 'activity' blank until you have read the next section.

TEXT	ACTIVITY
division of common foods into three main groups	
body-building foods/proteins	
their importance	
consequences of deficiency	
energy foods/carbohydrates	
their importance	
consequences of deficiency	
and excess	
protective foods/vitamins	
and minerals	
their importance	
consequences of deficiency	

5. A set of activities makes up a lesson

Earlier in this unit we looked at individual examples of learning activities. Now we must turn our attention to planning a set of activities which together make up a lesson. At this stage we would like to emphasise two main points:

- firstly, that activities form the basis of the lesson for the student;
- secondly, that these activities need to be ordered in a sequence.

5.1 The importance of activities

From the students' point of view, the activities <u>are</u> the lesson. It is through reading that they obtain information and ideas, but it is through repetition, practice, thinking out problems, and application that they learn. Thus the activities form the basis of the lesson and they are the first things the writer needs to think about; they are not 'extras' to be added on at a later stage.

5.2 The need for planning activities

The set of activities which make up a lesson need to be put together to form a sequence, just as a face-to-face lesson progresses from step to step. Planning the steps which your learners will follow is often the most difficult part of

preparing distance education materials. To do it you must rely on what you know of the (potential) students. You must ask yourself how much they will know already and what they will need extra practice with; which parts of the work they will find specially difficult, how much new material they will be able to absorb at one time. Remember that if you misjudge the needs and abilities of your students, you will not be able to give them extra help on the spot.

5.3 What activities?

If possible try to examine a lesson from a course which is already in operation, either at your own institution or elsewhere. Look closely at it, asking yourself, for example:

- which are the learning activities in the lesson? How can you distinguish them from the text?
- what type of activity is involved in each example? (e.g. practical, copying, calculation, note-taking etc);
- what is the purpose of each activity? (e.g. reinforcing memory, practising new vocabulary, etc.);
- are the activities appropriate both to the learners and to the subject?
- are there enough activities, too few, or too many?
- taken as a group, do the activities help learners to progress towards their goal?

5.4 Deciding on appropriate activities

In a moment you will be asked to devise suitable activities to accompany each section listed under 'text' on your outline. For example, the first item under 'text' might read 'division of common foods into three groups' (or perhaps 'four groups', if you are writing for the adult correspondence students). The text you will eventually write (in unit 3) for this part of the lesson might be followed by an exercise which asked learners to consider two or three favourite local dishes and say, or write down, which of the food groups each of the main ingredients of these dishes belongs to. If you feel that this is a suitable activity for your particular students you could write under 'activity':

> Identify food groups to which ingredients of two or three favourite local dishes belong.

The above is all that is needed <u>now</u>. Later, when you come to write the lesson out in full in unit 3, you would need to check that all the main ingredients of the dishes you chose for the activity had previously been mentioned in the text and identified as belonging to one or other food group.

The above-mentioned activity might be appropriate for all three groups of learners. (But only you can decide whether it is suitable or not). As you find other activities for particular sections of the text, these will probably be suitable only for

your particular group. For example, an activity to follow the text on 'the need for a balanced diet' might, in the case of rural women, include a recipe for a well-balanced meal made from only the cheapest ingredients. This might be very suitable for them since it would be both practical and linked to the learners' concern about costs. It would surely not be a suitable activity for either of the two other groups. If you are writing for the agricultural extension agents or for the adult correspondence students, perhaps you can think of a different practical activity which would be especially appropriate to their needs?

EXERCISE A

Complete the activity column on your outline now. Give yourself at least half an hour for this. Change the order or add other items under 'text' if you feel this will make the lesson flow better.

When you have done that, check that the outline:

- reflects the needs and aims of the learners;
- includes a variety of different sorts of activity;
- forms a complete and coherent lesson.

6. Summary

In unit 2 you have been revising the text you started in unit 1; by preparing a lesson outline we saw that:

- an active response to what people read or hear helps them to memorise facts and it also makes study more lively. It encourages people by confirming their progress and helps them to identify weaknesses;
- active responses may take the form of thinking, writing or doing. They may be repetitive memory-aiding exercises, ways to practice new skills, suggestions to extend learning to broader contexts, or simple test devices to assess progress;
- the type and range of activity you include varies according to the aims of the learners and their abilities;
- the lesson outline consists of all the active steps the learners will take while working through the lesson unit.

7. QUESTIONS FOR DISCUSSION

People working in a group should discuss all the questions together.

People working on their own should ignore question 2 and discuss questions 1 and 3 with the course editor or equivalent person at the distance teaching organisation to which they are attached.

1. What difficulties did ycu find in preparing a lesson outline?

2. If your group is working on one single subject, you may like to consider what types of learning activity are especially suitable in that subject. If you are working on different subjects, compare your lesson outlines and see how much they have in common.

3. In distance learning, one of the crucial factors is the absence of the teacher in person. Discuss some of the consequences of this. How can distance teaching materials compensate for this absence?

UNIT 3: Improving the presentation

1. Objectives

In this unit you will rewrite the lesson you started in unit 1, after practising

1.1 writing in an appropriate style;

1.2 writing in clear, simple language;

1.3 alternative ways of presenting materials (pictures and diagrams).

2. Style

No-one can tell a writer what style is best; he must develop a style of his own. But at the same time he must bear in mind that he is taking the place of the conventional teacher, and that he must therefore incorporate into his text all the stylistic features of a good face-to-face teacher. Beautiful prose is no use to the student if it doesn't help him to learn.

2.1 The importance of a personal style

How does a good teacher talk to his students? First, he is friendly and encouraging. The course writer too should address his students as 'you' and generally speak to them, in print, just as he would in person. Secondly, the good teacher varies his style appropriately. He can be chatty one minute, serious the next; he can go quickly over familiar ground, but explain new and difficult points slowly and carefully. Thirdly, he makes his lesson interesting and lively, perhaps by fitting into it stories or anecdotes at appropriate places, or perhaps by asking students to relate the lesson to their own experience.

2.2 Should a writer aim to be humorous?

Humour is a very tricky thing to present. If it works, it can provide strong motivation to students and can keep them on their toes. On the other hand, if the students are unreceptive and the joke falls flat, it can have a very discouraging effect. Humour is something you should only try if you know your students well enough to be certain that they will appreciate it.

2.3 Style varies with language

These points apply when writing in English, but not necessarily in all languages. Conventions of written style vary in different languages, and you should respect the readers' expectations of what is appropriate. A related point is that some languages have standard written forms which are understood by speakers of a wide range of other dialects, so that a more formal style will reach a wider audience than a chatty colloquial one.

2.4 The style should match the subject

A final point to make about style is that it needs to fit the subject. A university philosophy course ought obviously to be written quite differently from a course in basic book-keeping - and within the subjects of philosophy and book-keeping there are subtopics which all require a different sort of treatment. There will be differences in the way the sentences are put together, and also in the way the subject-matter is broken up into sections and displayed. Different topics will make varying use of alternatives to connected prose such as lists, tables, illustrations and so on. We will return to these later on.

Look back at your text written in unit 1. How do you feel the style could be improved? In particular, is the style varied and friendly and does it match the demands of the subject?

3. Language

Because distant learners do not have immediate access to a teacher, it is important that the language of the text is quite clear to them. This means that the language must be appropriate to their reading ability. All of us understand more readily when what we read is written simply. But adults who have little schooling or who left school a long time ago will need much simpler language than, say, university undergraduates. The need for simplicity is much greater for those who are reading in a second language. The guidelines which follow have been developed for use in the International Extension College's correspondence units in Africa, with students using English as a second language. However, the main point behind them - that you should be as direct and straightforward as possible - probably applies equally in all languages.

3.1 Paragraphs

A paragraph should contain one basic idea or two related ones.

3.2 Sentence structure

Keep sentences short. In simple texts, limit yourself to <u>not more</u> than 20 words per sentence. In more difficult texts, short sentences are again generally better than long ones, but here you should also try to follow the natural flow of what you are writing.

Main clauses tend to be easier to follow than subordinate clauses. Two sorts of subordinate clause cause special difficulty for students with limited command of written English. These are, firstly, clauses beginning with <u>because</u>, <u>since</u>, <u>unless</u> and <u>although</u>. The problem here is that these clauses go against the logical flow of the sentence, or else they involve a negative idea (see below). So the sentence

He couldn't get in because the door was locked

should be replaced by the more straightforward and logical

The door was locked so he couldn't get in.

The second type of clause is 'embedded' clauses - clauses acting as adjectives or nouns, beginning with 'which' or 'that'. Some examples are:

The house that Jack built fell down.

The cake which I baked yesterday tastes lovely.

The news that the battle was over spread quickly

The problem is made worse when the connecting word is missed out, as frequently happens in English. 'The coat I was wearing yesterday' is more common in everyday English than 'The coat which I was wearing yesterday', but the latter might be less confusing to a non-native English speaker.

On the whole you should use active verbs in preference to passive ones, and write positive sentences rather than negative ones. But this isn't always possible, and sometimes not desirable. In clear prohibitions, an expression like 'Do not drink this' is very direct. Trying to change it to a positive expression will be clumsy and will lose its force.

In general, these guidelines are worth following for most types of course, but don't follow them too literally. The underlying point is that you should be direct, follow the logical flow, and tailor what you write to the reading abilities of the learners.

3.3 Vocabulary

Keep to familiar words where possible. If you must use a word which readers may not know, explain its meaning when it first appears and give practice in using it.

Try to use concrete words in preference to vague general ones.

In English, avoid words with more than two syllables, if you can find shorter substitutes.

One of the most difficult items of vocabulary in English is the phrasal verb. Phrasal verbs are verbs which are followed by an adverb in such a way that the two words together form a phrase. For example, in the sentence

The children ran out of the door

the adverb 'out' belongs to the words which follow it. But in the sentence

The shop ran out of bread (i.e. there was no more bread in the shop)

the words 'ran out' form a phrase with a special meaning of its own. Sometimes these special meanings are fairly clear, but often they cause confusion to students whose mother tongue is not English. Here are some more examples of phrasal verbs which you should avoid:

The stream dried up (i.e. the water disappeared completely)

The boy made off with the money (he took it away)

Keep up the good work (continue at the same high standard)

We will <u>give up</u> football in March (we'll stop playing it)

I was <u>put off</u> by the first sentence (I found it discouraging)

To illustrate the points we have been making about language, here is a badly written paragraph, followed by a second paragraph containing the same passage, rewritten:

<u>Bad</u>

Supplies should be re-ordered in advance of their running out. The most efficient procedure for re-ordering is to take stock regularly, ordering all supplies which have run low, while bearing in mind the length of delivery time.

Precautions must also be taken against theft although damage of other kinds is also to be guarded against.

<u>Good</u>

You should re-order supplies <u>before</u> they are finished, not after. It is best to check the supplies every week. Make a note telling you how much is left of each item. Order the items which need replacing. Remember, you must often wait for several weeks until the manufacturers can deliver your order.

It is your job to protect your supplies. Make sure that thieves cannot enter the store. Also make sure that the supplies are safe from fire, rain and insects.

3.4 Testing for readability

Check your text against these guidelines. Ask yourself:

- are paragraphs short and orderly?
- what is the average number of words per sentence?
- how many words contain more than two syllables?
- have you used any words which readers may not fully understand?
- how many times have you used a phrasal verb?
- how many verbs are there per sentence on average?
- how many passive verbs are there?

Answers to these questions will not on their own tell you whether the text is satisfactory or not. Secondary-level students can clearly cope with a much more concentrated style of writing than people who have only just learned to read. In the long run only your readers can judge. We have included these questions partly to encourage you to examine your own work carefully, and partly to suggest that some sort of readability check may be very helpful.

Readability tests do not provide an absolute assessment of your work, but they can provide you with a way of comparing it with other texts. If you want to take this further, take a text you know to be well-understood and whose readers are roughly the same sort of people as the readers of your own text. Analyse it in the way described above. How does your text compare with it? Does the comparison show you where improvements could be made?

Once you have done an analysis of this sort, the next step is to change what you have written. When you are making alterations, bear in mind that the test you have just done shows up the weaknesses of your text in general terms only. It provides you with a guide when rewriting. It is probably not a good idea to alter words and phrases here and there: you will need to recast complete sentences or paragraphs.

One final point: analysis of this sort does not tell you how to write. Style is a personal matter, and no amount of objective testing can be a substitute for vitality and clarity of thought.

EXERCISE A

Look back at your first draft nutrition lesson. Do you think it matches up to the points made above about language? Make notes about how you would change it another time.

4. Alternative ways of presenting material

A piece of continuous prose may not be the best way of presenting factual information. You may feel that some other format is clearer and more effective. You may want to use pictures or diagrams.

4.1 The use of pictures

Pictures, when properly used, add variety and interest to a text. They can also often serve to transmit information in a simple and forceful way and so writers should be aware that a good picture often expresses their meaning better than words. Pictures can serve several purposes:

- they can explain something which would be difficult to describe as clearly in words alone. This is especially useful in giving practical instructions. Look at Samples 3 (top diagram), 17 and 21;
- they can be presented as evidence, to support a statement which readers might find unconvincing. You might for example include pictures of two fruit-trees in full fruit, one pruned and one left to its own devices, if you wanted to convince readers that pruning improves the crop. An interesting example comes from Niger, where schoolchildren were reluctant to believe that man had set foot on the moon. But they accepted the story readily after seeing a photograph of the event;

- they can reinforce a written message by making it seem more concrete (see Sample 18);
- they can be used as cues to help people through the various activities in their course (see the symbols in Sample 26);
- they can remind learners of messages already assimilated. In Sample 31 you see one of a set of posters which formed the basis of group discussion questions for illiterate village women. Each woman received a copy of the poster to take home as a reminder at the end of the session;
- they can form the basis of learning activities. Sample 4 for instance shows a language practice exercise based on a picture story. Samples 21 and 24 test readers' knowledge by asking them questions in pictures;
- they add variety (see Sample 23).

4.2 *The problem of visual illiteracy*

Like any other part of a distance teaching text, pictures are open to misunderstanding and need careful testing. There is little point in trying to present a complete message in pictures alone - people who can't read are likely to have problems in interpreting pictures, too, and it seems that most people find a sequence of pictures with no verbal clues hard to follow. Nor is there much point in including pictures just for the sake of brightening up the page - the pictures will confuse unless they are meaningful to the context. Text and picture should reinforce each other.

'Visual illiteracy' is easier to overcome than the verbal kind, yet it is still an effective barrier to communication and one which is often overlooked. 'Reading' a picture means that a person:

- understands what the picture represents
- understands the message
- accepts the message as relevant

We will look next at some of the factors which can help or hinder visual illiterates in doing these three things. However, you should bear in mind that many of these points apply to pictures for all sorts of readership.

4.3 *Choosing appropriate pictures*

To understand the picture, the viewer needs to be shown objects which he or she recognises easily. They should include all the familiar details which help identification, but not so much detail as to be confusing. The objects should not be distorted in size or drawn from strange angles. Visual illiterates have difficulty in making sense of perspective drawing and may be unfamiliar with such widely used conventions as arrows, ticks and crosses, or cross-sections. Parts of things, such as disembodied hands or heads, may not easily be understood.

In general, the style in which the picture is presented is not a significant factor. There is no evidence that people consistently understand photographs better than line drawings, or vice-versa. It is the clarity and familiarity of the picture to the viewers which counts most. Of course, this may mean that one style or another is best for a particular object. A study in Lesotho, for example, found that people recognised a photograph of a donkey easily, but confused a line-drawing of a donkey with a horse. The photograph showed up a white patch on the donkey's nose which was essential to recognition. On the other hand, a picture of a bus was equally recognisable in both photographed and drawn forms.

Much the same can be said about colour. In general, colour does not add significantly to people's understanding of pictures. But there are a few occasions when colour can avoid confusion between objects which are similar in every other way (such as some root vegetables which are not distinguishable by shape or size).

Often the best style to use is one which conforms to local artistic traditions, as this obviously helps people to recognise the subject-matter. The poster in Sample 32, for instance, was used to promote breastfeeding in Ethiopia.

Understanding the message is as important as understanding the picture. Simplicity is essential here - a complex message with more than one element in it may not be understood correctly. A poster tested in India illustrates this. The poster aimed to put across the message 'Kill rats because they destroy wheat' by means of two pictures placed near each other. One showed wheat being eaten by rats, the other showed dead rats. There was nothing in the illustration to link the two pictures. Although most of the villagers in the sample recognised what was in the pictures, and were also able to read the caption 'Kill rats', only a few of them understood the message. This example also shows how the visual element in a poster can dominate the verbal element.

For a message to be accepted as well as understood, people need to be able to identify with the picture in some way. They need, firstly, to recognise the objects in the picture as being part of their lives. Make sure your illustrations depict locally-known objects and local varieties of plants and animals - otherwise you may get a response such as 'Ah, but <u>our</u> cattle don't get <u>that</u> disease, so we won't need to innoculate them'.

4.4 Diagrammatic formats

When you want to present a piece of complex information it may be better to use a diagram rather than prose.

There are various formats which you may find useful including a table (Sample 36), a flowchart (Samples 33 and 34), a bar chart (Sample 35) and a piechart (Sample 35).

Use these formats tentatively; they are generally only suitable for presenting specialised information.

4.5 Which format?

The best way to display information is the way which allows readers to extract relevant facts from it most easily. Decide first what precise point you are trying to illustrate, then select a format which makes that point clear. For example, imagine you are displaying figures showing percentages of a population engaged in different occupations. Is it the figures themselves which are of interest to readers, or the proportions of each occupation? If it's the figures, you may settle for a table; if the proportions are the important element, a pie chart may do the job more effectively.

Which format you choose also depends partly on the subject-matter. Clearly some formats are limited in the range of information they are capable of showing. Pie charts, for example, can only show the proportions of several items within a whole. A table, on the other hand, can compare two sets of variables, each with an almost indefinite number of items.

The choice also depends on what the learner wants to do with the information. A study made recently in England showed that flowcharts helped people who needed to sort out relevant information from a mass of confusing detail. But for those with less complicated needs, flowcharts were not significantly easier to use than tables or listed sentences. Another point to consider is whether readers will want to select items in the format (as with a bus timetable) or to memorise the whole thing. For memorising, the number of items should be kept to a minimum - most people can only remember with ease between 5 and 9 items in a list.

The choice also depends partly on the reader's familiarity with different formats. A flowchart might be very effective for, say, travel agents or accountants (who are probably accustomed to using tabular information) but quite lost on a village health worker who has only had, say, four years of primary schooling.

Of course there is no reason why you should necessarily choose only one format. It may well be sensible to present the same information in several different ways. By doing so you can ensure that different aspects of the information each receive prominance. It will also help to reinforce relevant points, and will allow for readers' individual preferences in styles of presentation.

4.6 Summing up

The use of illustrations and diagrams in educational materials is a complicated subject and we have only been able to summarise some of the points here. Look back through pages 31-33 and the samples to remind yourself of the various uses of pictures and diagrams. Basically these fall into three groups:

- explaining;
- helping people to learn;
- adding variety.

Remind yourself too of the three aspects of 'reading' a picture:

- understanding what the picture represents;
- understanding the message;
- accepting the message.

Check also that you know how different ways of presenting illustrations can affect people's ability to 'read' them.

One final but very important point:

- whatever pictures and diagrams you use, the information contained in them must be explained in the text.

5. Rewriting your text

Look at the first draft of your lesson again. Are there any parts which could be expressed more simply or more forcefully in pictures or diagrams? Which are these? What could be achieved more effectively visually than in words?

EXERCISE B

Now write a second version of your nutrition lesson, using the outline you prepared in unit 2. Bear in mind all the points you have learned in this unit about language and style, and about alternative means of presentation. Indicate where you think pictures and diagrams, if any, should go, and what they should depict. Make a rough sketch of these, if you like.

When you have done this check through your text again. Make sure that you have made all the alterations you want to in style and language. Are you satisfied with the arrangements you have made for non-prose forms of presentation?

Now compare your present version with the original one. How big an improvement do you think you've made? Is your present version more of an equivalent to a face-to-face lesson?

6. Summary

In this unit you have written a second draft of the passage begun in unit 1. You have been paying special attention to the way the subject-matter is presented. To summarise what you have learnt about presentation in unit 3, written texts should be:

- warm and varied in style;
- comprehensive in their understanding of readers' difficulties;
- simple in structure and vocabulary, in accordance with the readers' level of linguistic ability;
- enlivened by illustrations where appropriate;
- simplified by the use of diagrams, if specialist information is to be presented.

7. QUESTIONS FOR DISCUSSION

1. Compare the three groups of learners described on page 7. How far do their needs differ in respect of:

   - style of writing;
   - level of language difficulty;
   - non-prose presentation.

2. One of the advantages of face-to-face teaching is that the teacher has immediate feedback from learners, and can respond to this individually. In distance education this is difficult to achieve. How can the presentation of distance teaching materials overcome this problem?

UNIT 4: Systematic planning

Unit 4 marks an important change of direction for this manual. Up till now, you have been concentrating only on writing, and you have probably been working on a topic suggested by us (nutrition). From now on, you will be starting work on your own project, producing materials in your own subject. We will be looking at all the different stages in production, starting with project planning, working through writing and revising, and finally looking ahead to the implementation of the project.

1. Objectives

You are now moving on to working on your own project, and we begin by considering the importance of systematic planning. In unit 4 you will make a start on this by working through the project planning stages. These are:

1.1 identifying a need;

1.2 formulating objectives;

1.3 listing resources and constraints;

1.4 preparing an outline plan.

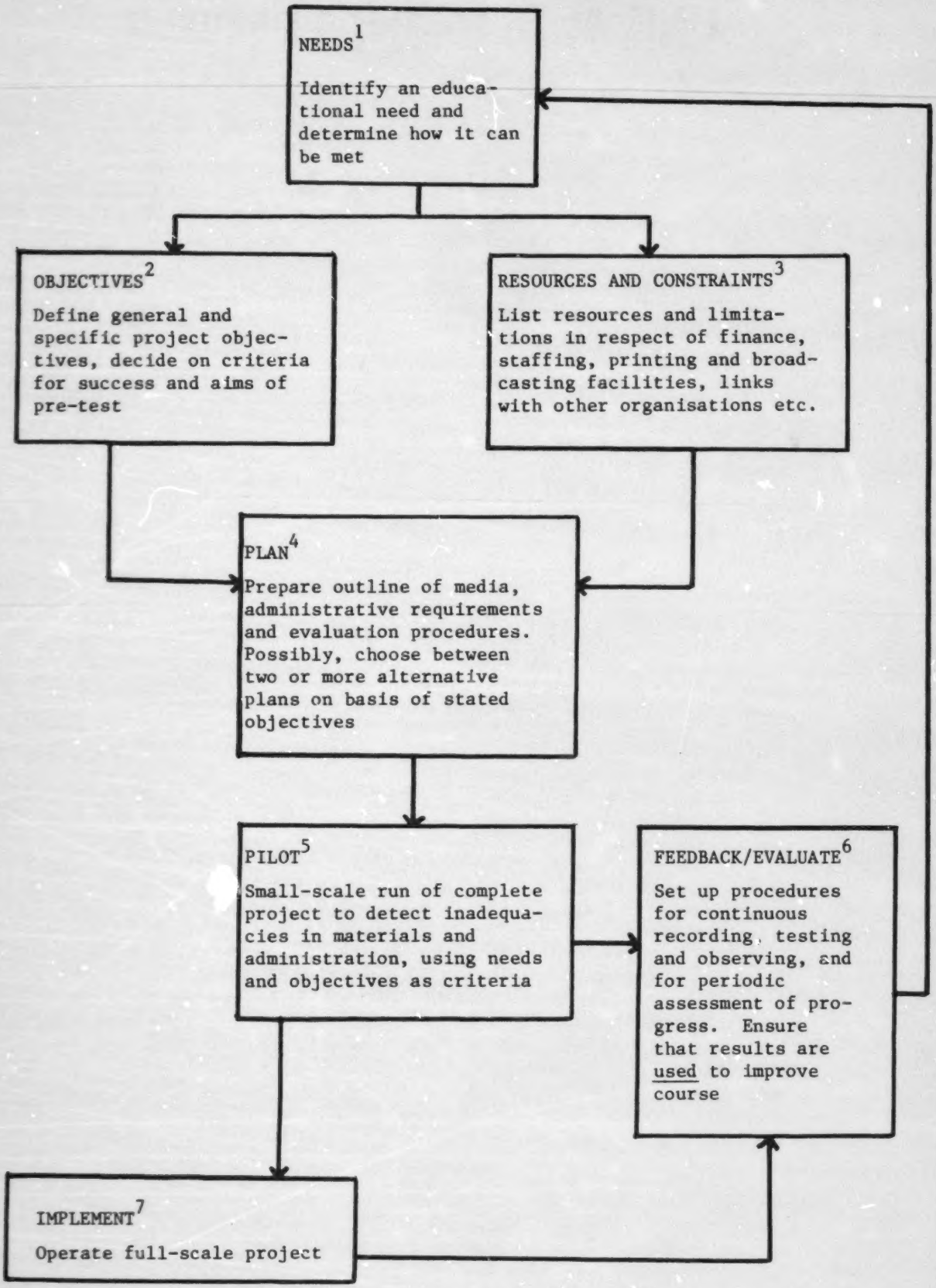
2. The systems approach

All good teachers plan their lessons in advance. But one of the great advantages of face-to-face teaching is that you can be flexible about implementing your plans. It is relatively easy to make on-the-spot adjustments to suit particular groups of learners. In distance teaching this isn't possible. Printed materials must be prepared in advance, and often students will not have a teacher on hand to interpret them. So the suitability of the materials must be built into their preparation from the start. For this reason systematic planning is essential in producing distance education materials.

We can divide the question of planning into two stages. First, there is the overall planning of the educational project, which includes deciding about the place of written materials within the scheme. Secondly, there is the detailed planning of the materials themselves. We will discuss the first of these in this unit, and the second in unit 5.

As a writer, will you be involved in the overall planning of the project, or have the major decisions been taken already?

Whether or not you have taken part in the initial planning, it clearly helps you to be aware of the planning process and of the particular plan your institution has adopted. There are probably a number of approaches to planning which could be used, and the one we present here is not by any means the only possible one. It has, however, been tried out in many different contexts and we have found it to be sound. We can summarise it in the


NEEDS[1]
Identify an educational need and determine how it can be met
OBJECTIVES[2]
Define general and specific project objectives, decide on criteria for success and aims of pre-test
RESOURCES AND CONSTRAINTS[3]
List resources and limitations in respect of finance, staffing, printing and broadcasting facilities, links with other organisations etc.
PLAN[4]
Prepare outline of media, administrative requirements and evaluation procedures. Possibly, choose between two or more alternative plans on basis of stated objectives
PILOT[5]
Small-scale run of complete project to detect inadequacies in materials and administration, using needs and objectives as criteria
FEEDBACK/EVALUATE[6]
Set up procedures for continuous recording, testing and observing, and for periodic assessment of progress. Ensure that results are used to improve course
IMPLEMENT[7]
Operate full-scale project

SYSTEMS APPROACH TO EDUCATIONAL MATERIALS PRODUCTION

form of a flowchart, which you will see on the opposite page. Below we explain it in more detail.

2.1 Needs

The first stage of the project is to ascertain that a need exists, to define it carefully and in detail, and to determine whether or not you can meet it. By saying that an educational need exists, we mean that something is lacking in people's lives which an educational programme can help to provide. For example, adults may want to further their education but not have the facilities to do so. Alternatively some facilities may exist but the adults may not be able to use them because of timing, location etc. A very different kind of educational need can arise when a community is undergoing rapid economic and social changes with which its members feel unable to cope.

Needs are what the people themselves regard as their educational needs, rather than what others think would be good for them. If research shows that a group of people have a whole range of educational needs, you will have to choose from amongst these only those you can realistically hope to meet. Thus a lot of careful consideration has to go into this stage of planning.

Defining needs is sometimes a fairly straightforward business. If you are running a correspondence college and you get a considerable number of requests for a course in, say, business studies or local history, or if you find out through following up enquiries that many potential students were seeking higher qualifications than you were offering, then clearly a demand exists which is not being met. You may also be approached not by potential students but by other institutions - a ministry of health or agriculture, or a co-operative organisation, for example - who want to work with you in meeting a need which they have themselves identified.

However, there are cases where assessing educational needs is far from simple, and various research techniques may be required. This is particularly the case in rural areas where people may not be immediately aware of how a particular problem may be solved in educational terms e.g. a general desire for better health may indicate a need for health education but the exact form which this takes depends on the voicing of specific needs. Work has hardly begun on ways of identifying needs in such circumstances. We can however point to two general approaches which have proved to be helpful:

> In the <u>first</u>, techniques of observation similar to anthropological fieldwork are used - the researcher spends several weeks or months living in a community, learning what its concerns, problems, pleasures and resources are, and trying to identify the complex web of factors which contribute to the community's condition. From this general but intimate picture of village life can be built a more informed view of the real needs of the community.
>
> This approach helps to deal with the problem of cross-cultural communication but it doesn't attack what is often the next big problem, i.e. the villagers' lack of self-

awareness and self-confidence in making demands for the improvement of their lives.

Thus the second approach is one in which the process of identifying needs is at the same time part of the 'educational' programme itself. Programmes of this kind often start by using a 'key' as a basis for discussion. The key might be in the form of pictures, stories, key words etc. designed to generate an open-ended discussion in which participants examine their situation. In this way they learn to define their own needs. One of the foremost protagonists of this approach is the Brazilian educator, Paulo Freire. Supplement 1 includes a discussion of his work in more detail.

However thorough the preparation is, the only realistic way of assessing needs is to go ahead with a project and see how it works. The response to that project will show you how correct your assumptions are. In this way your programme will become progressively more relevant to the learners' needs.

What is the most suitable in your case for assessing needs? What problems limit you in assessing them adequately?

Once the need has been defined it must be stated clearly and fully for later reference. This requires a description of the general background to the project, indicating what problems are encountered and by whom. Include everything you know about the potential learners - how they earn their living, how they spend their time, what their educational background is, and so on. You also need to say precisely why distance teaching techniques, rather than traditional face-to-face methods, seem appropriate to meeting the need(s) you have identified.

EXERCISE A

Write 1 or 2 pages on the background to your project, explaining what need you have chosen to meet and why.

2.2 Objectives

The next step is to specify the project's objectives, i.e. to set down precisely what you hope it will achieve. This is often the most difficult - and crucial - part of the whole process of producing materials, as every later decision will depend on the way the objectives have been defined. There are three main problems in setting down objectives.

First, any educational project will have several objectives. For example, an agricultural extension programme may have specific teaching aims (such as introducing new techniques) as well as economic aims (such as increasing family income or national production), and also some intended side-benefits (such as a better-fed population or an equalising of wealth). A project may also aim to test the methods it will be using: one might want to discover if printed materials or radio could be used effectively to support the work of extension agents.

There may also be different teaching aims at more than one level: while learning certain facts and developing an understanding of a new technique, farmers would also be changing their daily behaviour and, perhaps, their attitude to their work. Clearly, all these objectives are important. The difficulty is to decide which of them are the most important, the ones by which the project must later be judged successful or otherwise. The only way of deciding is to refer back to your definition of needs. The important objectives are the ones which most directly contribute to meeting those needs.

EXERCISE B

Make a list of all the objectives your project hopes to meet. Then refer to the definition of needs which you have just written, and select the objectives which most closely relate to those needs.

Secondly, there is the difficulty of stating objectives. Formulating objectives can be very hard and most people need guidance with them at first. Supplement 2 includes a more detailed discussion of objectives, and you should look at this now.

Objectives will be used as a point of reference for all those who are or will be involved in the project. This means that they must be as precise and full as possible, in order to avoid alternative interpretations later on. Where possible, this means that they should be expressed in terms of what the participants will be able to do as a result of taking part in the project, in order to provide a yardstick for performance.

It is also desirable to include in the statement some way of assessing whether the objectives have been met. In the agricultural example mentioned above, we should consider how, for example, the teaching objectives would be assessed - by reference to tests of comprehension or performance, increased yields, surveys of general satisfaction with the course, drop-out rates? And what results will be considered acceptable? It is at this stage that the answers should be spelled out.

The objectives will later be used, among other things, during the pre-testing of the materials. They will help in designing the pre-test by making clear what information it should provide. For this reason it is helpful if the statement of objectives also includes a reference to the specific objectives of the pre-test.

Thirdly, it will not always be possible to spell out the objectives precisely. It's in the nature of education that not all of its effects can, or should, be quantified. You can't test a person's artistic sensibilities or his powers of self-expression in the same way that you can mark his scores in a maths or spelling test. And although some of the side-effects of education (such as increased yields) can be measured, they cannot usually be ascribed to any one particular cause.

EXERCISE C

Look back at the list of project objectives you have just written. Re-write them where necessary, following the guidelines above and in Supplement 2. Try to make them as precise and full as possible. Include indications of how they will be measured and how the project will be tested.

Writers are not always responsible for formulating project objectives - sometimes the decisions have already been taken before the writers are brought in. But as a writer, you will clearly be required to keep to the objectives, whether you have contributed to them or not. So it is as well to ensure that you are familiar with the project objectives, that you understand them, and that you are broadly in sympathy with them.

At this stage, we are concerned with objectives as guidelines for writers and other people involved in the project. But this raises slightly different problems, and will be looked at more closely in unit 5.

2.3 Resources and constraints

Before making more detailed plans, you need a clear picture of what resources you can call on and what constraints will operate.

The first question is: how much money is available for the project? Lack of finance frequently limits the scope of educational projects. You may not be able to meet all of your objectives if there is less money available than you would like.

Secondly, you need to ask questions about the media available to you:

- should you try to link academic courses to textbooks?
- do you have broadcasting facilities?
- would cassette tapes and/or slide presentations be feasible?
- how much face-to-face support can you provide, if any?
- are there ministries of other organisations which might be able and willing to help by making staff or facilities available to you?

Look at Supplement 3 if you would like to read more about the different media and ways of combining them.

Thirdly, you must ask questions about delivery, reception and availability. Distance education organisations, usually distribute their materials from their headquarters using the postal services:

- can <u>all</u> potential students be reached by the postal services? If not, what alternative methods of distribution exist?

- is the postal service sufficiently fast and reliable that student's work sent to a tutor for marking could be processed by your distance teaching organisation and sent back to the student by post without a long delay?

Fourthly, before deciding to use broadcasts, you must ask:

- is good reception widespread?
- will students have access to receivers?

Fifthly, if it is intended to supply e.g. learning groups with radios or tape-recorders, you will need to ask:

- will they have everything they need to operate the equipment (such as a supply of batteries sufficient for the duration of the course)?

In finding the answers to questions such as these you may have to modify your original aims or devise unconventional solutions to some of the problems. It is essential to do this now, before planning the project in detail.

EXERCISE D

Write down what you see as the major resources and constraints with which you will be operating.

2.4 Plans

The next stage is to draw up outline plans for the project. These will indicate:

- what form the materials will take;
- how they relate to each other;
- how long the project will take;
- what administrative arrangements it will need;
- what information for feedback and evaluation will be needed;
- how it will be collected;
- who will carry out all the tasks involved.

The writer will be mainly concerned with the first two parts of the plan. However, he will also need to be aware of the other parts.

It is usually possible to draw up two or more plans. Then those concerned with the project will have to agree on the criteria by which they can select the most appropriate plan. Sometimes there will be little room for choice and the plan will be largely determined by circumstances.

Three of the most important planning decisions for the writer are:

- which media are to be used;
- exactly what materials will be produced;
- how the various elements will be used.

Refer to Supplement 3 for more about the use of the different media.

To see how this works in practice we can imagine a course writing plan for a correspondence course in Book-keeping. Two alternative plans might look something like this:

	Media to be used	Materials	How used
PLAN A			
1.	Print	- Corr. course, 20 lesson units	Main medium of instruction. Includes all necessary information and practice. Students do 1 tutor-marked assignment in each unit.
		- Ready reckoner	For quick reference
		- Ledger paper	For practice exercises
2.	Radio	- 40 weekly lessons ½ hr. each	Discussion of common problems in course (taken from feedback from tutors). Advice on studying. Information about week-end courses, exams etc.
3.	Face-to-face	- Week-end courses 3 times a year in different areas, all students hoped to attend one	Personal contact with tutors. Classes in difficult topics. Preparation for exams.

	Media to be used	Materials	How used
PLAN B			
1.	Print	- Corr. course, 20 lesson units	Main teaching instrument. Refers to text-book for basic info. and selected exercises. Students do 1 tutor-marked assignment per unit.
		- Textbook	Main source of reference and practice exercises.
		- Ledger paper	For exercises
2.	Cassettes	- 1 taped lesson per unit	General guidance on lessons, study techniques. Quick-check questions plus answers.
3.	Face-to-face	- Occasional 2-day sessions organised as occasion arises by tutors	Personal contact with tutors. Classes covering difficult topics.

If your students live mainly in rural areas, have few facilities to rely on, and form a large group of students (as compared to students on other courses) which of the two plans do you think would be most suitable?

How closely two different media mesh in together will vary from project to project. In some cases the connection is quite slim. In a family planning project in Lesotho, for example, print was used in the form of informative booklets for the general public and for family planning field-workers, while radio spots publicised the project and echoed one of the projects central themes. The link between the two elements was thus an indirect one. Contrast this with the Tanzanian radio campaigns in which groups meet to listen to radio programmes and discuss the content. Three sorts of materials are produced: radio programmes, study guides for group members, and manuals for group leaders. The study guides and manuals relate in detail to each of the radio programmes.

In the realm of correspondence courses, it is hard to link the media closely if students are working at their own pace. Science and maths courses in Kenya, for example, include weekly radio programmes which do try to teach as well as give general information and advice - but only simple topics and exercises are possible as students are all at different stages in the course.

One solution is to get students enrolling at regular times and following 'paced' courses. In the Open University, each written unit is accompanied by a radio and a tv programme. In theory, the three materials complement each other and are supported in turn by locally-organised tutorial meetings. In practice the link does not always work as beautifully as it does in theory; not all courses or topics can be nicely split in four different ways. Another solution is found in a radiophonic school in the Dominican Republic. Here radio programmes present the lesson, while printed booklets include appropriate exercises and illustrations. The programmes teach two grades at the same time - while one grade is doing written exercises with the radio turned down, the other grade is listening to the presenters explaining the lesson. After a minute or two the pattern is reversed. Some sections of the radio lesson are common to both grades: this is possible because each lesson is built round a 'theme', integrating all the different elements of the curriculum.

'Pacing' does have drawbacks for adults who have commitments to their work and their families. But the advantages are that it makes it possible to link printed materials with radio, and to make group study feasible. In countries where educational facilities are limited and where contact with qualified tutors or instructors is difficult to arrange, group study can provide a very important means of support.

EXERCISE E

Draw up a plan or plans for your project, like the one on pages 44-45. If you have more than one plan to choose from, explain your choice and the reasons for it.

2.5 *The final stages: Pilot, Feedback/Evaluate and Implement*

By the time these stages have been actually reached, most of your work as a writer is over. But there are several matters which you should foresee while preparing your materials. For example, you should know what printing facilities your institution has available, and what can and can't be done with the design and layout of your material (see Supplement 4). You should also know what systems of field distribution and administration are in operation. Also try to find out what the overall schedule for your course is. A great deal of production work remains to be done after the writing is finished, so you will be causing a lot of problems if you are behind with your work. And finally, you should find out what arrangements are being made for feedback, testing and evaluation. Find out what part you as writer are expected to play. And decide what sort of questions you feel evaluation should provide answers to. These issues will be dealt with in more detail in unit 6.

3. Summary

In this unit we have discussed the basic preparation which is essential to the success of any course. We have tried to keep

it as brief as possible, as you are probably keen to start off on some real writing. But thorough preparation is half the battle, and there are some issues which just cannot be avoided.

By now you should have in your file:

- a statement of the educational need your course will meet;
- a statement of the objectives you have set for the course;
- a list of the resources and constraints you will be working with;
- a 'media plan' indicating what materials will be produced and how they will be used.

4. QUESTIONS FOR DISCUSSION

1. How do you think that course planning will help you in your writing?

2. Which members of staff do you think should take part in course planning?

3. This unit has mainly been concerned with project planning. How far do you think the same system can be applied to the planning of materials?

UNIT 5: Writing

At the end of unit 4 you prepared an overall plan of your project in general, indicating the place of your written materials within the scheme. We now focus on the actual writing of these materials.

1. Objectives

In this unit you will first prepare an outline of the material you will write, and then write a draft for testing. To do this we will:

- *1.1 distinguish between different kinds of instructional materials;*
- *1.2 consider what to include and how to organise it;*
- *1.3 discuss points relevant to writing correspondence units in particular;*
- *1.4 recap what we have already learnt about writing in general.*

2. Writing different kinds of materials

In this unit it will be necessary to make a distinction between correspondence courses on the one hand and other sorts of instructional material on the other. The distinction is partly one of *length* - the first draft you write will be for testing, and it clearly makes sense to test just a few correspondence units before writing the whole thing. An instructional booklet will probably not be long enough to split into sections for testing; indeed, it will probably itself be a section of a longer series of booklets. The second distinction is one of *style*, which in the case of a correspondence course will probably be more formalised. With a correspondence unit you will have to make the underlying format - objectives, introduction, and so on - more obvious to the students in order to provide them with signposts to guide them through the lesson. In the case of other materials the same format will still be there in your own plans, but less formal in the actual written version. The third distinction relates to *how the materials will be used.* Correspondence materials will normally be used in conjunction with one or more other elements: a tutor, or radio programmes, and you must plan and write correspondence units in such a way that these fit in clearly with the written lessons. Non-correspondence materials are more likely to be used as a support to face-to-face or radio teaching, rather than as a base for them.

However, it is clearly unwise to make too rigid a distinction between correspondence and other materials. For this reason we suggest that <u>all</u> readers go through the sections devoted to correspondence units, whether they are going to be writing these or not. Many points arising in these sections will be common to any type of material.

3. Preparing an outline

3.1 Deciding what topics to include

Your next task is to write a list of the topics you need to include. You will probably have to be selective, so that your work is attuned to the demands of the learners' situation. In doing this, there are two things in particular to bear in mind:-

(i) Your list of needs and objectives which you drew up in unit 4. Make sure that the topics you include relate directly to these needs and objectives. It can sometimes be quite hard to put aside your own preconceptions of what needs to be taught. For example, you may have been asked to write a book-keeping course for treasurers of village development committees. If you yourself are an experienced accountant, you may need to fight hard against the temptation to start the course by describing all the different books of account. In this instance, your course will need to use a very simple system of book-keeping. You'll have to start by dealing with some very basic ideas about why books are kept at all. This course should be very functional, and keep strictly to the topics which the treasurer's job requires.

(ii) Secondly, bear in mind what we discussed in unit 2 about active learning. Refer back to this lesson if you need to refresh your memory now. To encourage active learning, you need to build the subject-matter round the activities, rather than adding activities on as an afterthought. In fact, it will help you to clarify your thinking on what subjects to include, if you ask yourself first of all 'what do I want learners to do as they work through the material?'

EXERCISE A

Make a list of all the topics you want to include, bearing in mind the two factors discussed above.

3.2 How to arrange the topics

The next task is to order the topics into a logical sequence. By 'logical' I mean that the sequence should be organised so that it helps the learner to grasp the subject, using the learner's existing knowledge as a starting-point. This too is something in which you should be guided by the learners' needs, not your own ideas.

The material should start off at a point which you are certain all the learners have reached. If it does not, you will have lost a lot of the less advanced ones before you start. For this reason, you may find that your opening section is much more elementary than first seemed necessary. When in doubt, remember

that it's usually better to make the content too easy, rather than too difficult.

From this starting point, the subject matter should move on step-by-step. Each step should take learners on a little further and consolidate by means of some sort of activity, before going on to the next step in the sequence. When discussing new topics, first introduce, explain and practise them before introducing the next step. You may need to include revision sections from time to time, or to introduce or recall study skills such as note-taking or organising study time. You may also need to offer advice on related areas which they should be familiar with. For example, science courses sometimes require students to have an advanced understanding of mathematics, and you may feel you need to include some maths teaching as part of your course.

The precise plan will also be influenced by the sort of work students will be asked to do. How long will each activity take them? How much time will they have? Will some activities involve more lengthy explanations than others? Will some activities need to be broken down into further divisions in order to simplify them?

If you are preparing a correspondence course, your list of topics will probably take the form of a list of titles for lesson units. Bear in mind that each unit should contain roughly the same amount of students' work; this is specially important in 'paced' courses. Fitting the topics into a set number of hours of work isn't always easy. You may have to cut some topics down, or spread some over more than one unit. And you may have to completely revise your ideas about what is essential and what can be condensed or skimmed over.

Finally, you also need to consider the influence of other media to which your written material is linked. For instance, if you have already decided that each of your units should refer to a particular radio programme, then each unit can deal with no more subject matter than can be contained in the programme - though your written unit may look at the topic in a different light. Similarly you will have to decide how much material can be dealt with in face-to-face sessions or by the normal process of tutoring. The written material, in addition to its other functions, will probably have to fill in the gaps which the other media cannot cover.

In stressing that the subject matter must be appropriate to the learners, we do of course recognise that this is what you normally do when teaching face-to-face. The demands of both print and direct teaching are the same in this respect. However, in the classroom it is possible to do this because you can make immediate reactions to people's learning difficulties. You can also modify your approach as you go along. Neither the immediate reaction, nor the flexibility are possible when teaching in print: thus careful advance planning is vitally important.

To sum up, when you are arranging the topics you should bear in mind the following factors:

- the appropriate level of difficulty;
- the need to introduce new topics carefully;
- the amount of work set for learners to do;
- other media.

Now look back to your list of topics on page 50. Do you want to add to or alter them? If so, do that now.

3.3 Preparing a lesson outline

If you are writing a correspondence course, a further step follows here: preparing outlines for individual lesson units. For the present, limit yourself to the units which will be used for testing, which will probably be the first two or three units of the course. You will need to plan and structure each lesson unit in just the same way as you did for the course as a whole in Unit 4. In a similar way, you need to define the objectives of the lesson, work out the uses of the different media in detail, plan students' work throughout the lesson, and arrange the various teaching points in a logical sequence.

EXERCISE B

For those of you who are writing trial units, write down:
1. The objectives of each lesson unit you are preparing.
2. The ways in which other media will complement them.
3. Whether you want to include any revision of preparatory material.
4. What sort of activities you want students to be doing.

EXERCISE C

Prepare lesson outlines for two or three units.

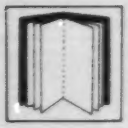
4. Writing for correspondence courses

There are a number of things which need to go into a correspondence lesson. We can consider them under three headings: *the opening of the lesson, the main text, and the ending.*

4.1 Opening

The opening section should help the student to find his bearings in the course, by linking his previous work with what he is about to do. This section will consist of:

- the title and number of the lesson unit;
- a statement of the lesson objectives. These may be expressed in a variety of ways, ranging from a formal list (see Sample 25) to a paragraph or two of prose explaining what students can expect to do and learn during the lesson (see Sample 26). They may consist simply of a list of the lesson contents (see Sample 27).



- a brief introduction outlining the subject-matter of the lesson, relating it to previous lessons. This might be the place to include revision exercises. Sample 28 shows part of a course where a revision exercise (signalled by the head full of question-marks) is a regular feature of all units;
- an explanation of any special skills or knowledge the student needs to have in order to do the lesson, and a list of any special equipment needed (Samples 12 and 22);
- a note indicating what other course materials are intended to be used in conjunction with this lesson.

4.2 The main text

As we saw earlier when writing the nutrition exercise, the text will be based on learning activities. One of the functions of the correspondence text is to indicate to students what other sources of information are to be found which are relevant to the topic concerned. Thus the text will make full reference to textbooks, radio programmes, previous lesson units, and so on. These references will concern the content of the other materials (see Sample 29) and also where appropriate give instructions about how to use them.

4.3 Ending the lesson

The lesson should be rounded off with a summary, and perhaps a checklist of all the activities to be done in the lesson (see Sample 30). There will also be a final piece of work for students to do. Probably, though not necessarily in every unit, this work is to be sent in for marking, and so it should represent some sort of check that the student has understood the work of the whole unit. In exam courses, the final, marked, piece of work will probably provide practice in techniques needed for the exam - in essay-writing, for example, or in conducting and reporting scientific experiments. You will need to include full instructions for completing the work, and for sending the work for marking. You may also need to prepare instructions for the tutors who will be marking the work. You should state clearly what sort of work you expect students to send in and what standards you consider acceptable. You may also want to suggest to tutors what sort of action they should take if students fail to reach those standards.

4.4 Introduction and first lesson

In addition to these points, there are some special features to include in the opening sections of a course. The first lesson of a course must be welcoming and must make the student feel that he will manage the rest of the course. The opening self-assessment questions and assignments must therefore be easier than those in the rest of the course. They should be concerned with giving practice in using the course, as well as in testing command of subject-matter.

But students also like to feel that they have achieved something right from the start. So the first lesson should also give students something practical to do, rather than merely present an outline of what is to come.

The introduction should given essential information about the course. This will include at least some of the following:

- a statement of the course's objectives;
- an outline of the course contents;
- an indication of what previous knowledge students need, if necessary;
- a list of any equipment students will need such as a ruler, notebook, ledger paper, etc.;
- advice on study habits, including advice on how to make use of supplementary media;
- some remarks on conventions used in the text, such as key symbols, boxes, and so on;
- advice on other sources of help;
- essential information about the examination for which students are preparing, if this is appropriate. This information should include a syllabus in some form and details of how to register for the examination.

We can summarise this section on correspondence lessons thus: when you have written each lesson, check that:

- the lesson has a title and number;
- the lesson begins with an introduction, a statement of objectives and a list of necessary revision items and special equipment;
- the subject-matter is ordered into small steps which follow on logically from each other;
- the student is given work to do to reinforce each point learnt;
- reference is made wherever appropriate to the use of supporting media;
- tutors are given special instructions (separately) about marking and recording, if necessary;
- students are given instructions for preparing and despatching assignments;
- the lesson is rounded off with a summary.

5. Writing instructional materials in general

The structure we have described for correspondence units can be roughly followed in all instructional material. This structure, as we have seen, consists of:

- an introductory section outlining what ground learners can expect to cover and indicating any special skills or equipment they will need;
- the main part of the text, based on the appropriate activities and linking in to other media;
- an ending, which will include a summary and some way of rounding the material off.

As you write, remember to keep the following questions in your head. We have dealt with these points earlier, but it is useful to have a checklist of this sort.

5.1 Linking written materials with other media

Make sure you have a clear idea of the function of the different materials. Don't put instructions to group leaders in the study guide, or exam information in the correspondence text if it ought to be in the radio programmes. At the same time, make sure that all participating in the course know what they are supposed to do and when. This means making clear references as appropriate. For example, you may need to refer, in a correspondence course, to radio programmes which accompany it, or to appropriate passages in a text. If a group of learners are following materials together, tell them exactly when to turn the radio on or exactly which passage to read next.

5.2 Learning activities

Is your text based on an active approach to learning? Have you included enough activity to keep readers alert throughout the passage? And are the activities varied enough to maintain interest? Remember the term 'active learning' covers a wide variety of things to do, from having a quiet think to digging a garden. It implies that learners pause, and consolidate what they have learned so far, before moving on to the next stage. Look back to unit 2 if you need to remind yourself of this.

5.3 Language and style

Make sure that the text comes over to the reader as warm and friendly, as far as possible as though you, the teacher, were really there. Keep the style varied and lively. Check the language and eliminate long or unfamilar words, passive verbs, and double negatives, unless they are essential (which they sometimes are). Rewrite long sentences, keeping as few verbs as possible in each sentence. Revise the material in unit 3 if you need to.

5.4 Diagrams and illustrations

Think about other, non-prose ways of expressing what you want to say. Diagrams can sometimes present information more clearly than a passage of prose. Illustrations can have several functions. They can make explanations clearer (especially explanations of practical procedures); they can help people to learn by reinforcing points made in the text or reminding learners of points already made, and by acting as signposts to the activities learners are expected to do. They can also add variety and help you to create an imaginary situation in which learners can practice what they know. Unit 3 includes fuller details.

When you are deciding what diagrams or illustrations to include, make sure there is a sensible relationship between them and the text. It is always best to include a caption. Make sure learners

can easily see the connection between the text and the non-text item. When writing your draft, you don't need to draw illustrations yourself (it will be better to get a professional to do this later). But you will need to indicate where the illustrations should come, how much space they will occupy, and what they should depict.

EXERCISE C

Now write the first draft of your work.

When you have finished it, read through the summary on page 54 (for correspondence courses) and the reminders on the same page (for writing in general).

Does your draft meet all the requirements? Are there any parts you would like to alter? If so, do that now.

6. Summary

In this rather long unit you have prepared a course outline, a lesson outline and a first draft for testing. We looked first at how to plan the content and structure of the course, basing our decisions on the course and lesson objectives, the type and amount of work learners are to do, the previous knowledge and ability of the learners, and the links, if any, with other media.

Looking at writing, we first reviewed the structure and contents of a correspondence lesson, then saw how the basic lesson plan applies, probably in a less formal way, to all instructional materials. Finally, we recalled what we learnt previously in units 2 and 3 about learning activities, about style and language, and about non-prose styles of presentation.

7. QUESTIONS FOR DISCUSSION

1. How important do you think it is to plan in advance? Did you find it helpful in your case?

2. What particular difficulties did you have in the preparation of your materials - e.g. problems with stating objectives, with structuring the subject-matter, with writing?

3. How do you think those difficulties might have been avoided?

UNIT 6: What next?

What happens to your manuscript once you part company with it? In this unit we will try to trace its progress through the stages of production and testing, until it comes to full-scale operation and evaluation. We are not going to deal in detail with the mechanics of these processes but will outline aspects of these processes so that you can keep them in prospect as you revise and test your draft.

1. Objectives

In the first part of this unit we consider the various aspects of course production in a distance teaching organisation and how these relate to your job as course writer. In particular you will look at the processes of:

1.1 editing;

1.2 piloting;

1.3 reproducing materials;

1.4 administration;

1.5 tutoring;

1.6 evaluation.

By the end of the unit you will also:

1.7 have practised running a pre-test of your draft;

1.8 be ready to start on your final draft.

2. Editing

Not all distance education organisations are fortunate enough to employ a fulltime editor. But whether or not your institution has one, you will certainly by now have come into contact with someone who is carrying out the job of editor for your course. This person will supervise the planning of the course and the pre-testing of your first draft, and will probably help you to interpret the results of the test. The editor has several different jobs to do, which we can probably summarise as follows:

2.1 The editor guarantees the soundness of your materials. This means, firstly, ensuring that the materials do actually teach people as effectively as possible; this is done by pre-testing the materials and by altering them according to the reactions of the learners. Secondly, the editor ensures that the content of the materials is correct and represents what is known about teaching the subject at the time. To do this, he or she consults one or more acknowledged authorities in the teaching of the subject.

2.2 The editor plans and supervises the production process. This includes liasing with designers and printers, preparing manuscripts

for printing, devising and keeping to schedules, checking up on details like the availability of textbooks or copyright for quotations.

2.3 The editor co-ordinates all the different elements in the course. This includes ensuring the right links between the media; it also means making sure that any additional requirements such as worksheets, report forms, correction notices and so on, are also provided on time.

So you can expect your editor to have experienced and informed comments to make about your work, and it is worth paying considerable attention to them. By the time the course is operational, the editor may have put in as much work on your manuscript as you have yourself. It is therefore important that you work together closely.

What sort of help and advice can you expect from your editor (or someone playing the part of an editor in your organisation)?

3. The pilot stage

A pilot is a full-scale test of a complete project, as opposed to the test described at the end of this unit in which some aspects of one set of materials is examined. In order to simplify the administration a pilot is usually conducted with a limited number of learners. A pilot often takes the form of a limited student intake for the first run of a course, so that it can be revised before it is made available to all students. The written materials are usually produced as cheaply as possible, often on a duplicating machine.

The methods employed in a pilot are more or less the same as in the pre-test. And many institutions dispense with them on the grounds that time is too short to run both pre-tests and pilots.

3.1 Why bother with the pilot?

Firstly, you're testing the whole course, not just one set of materials. So if there are any problems over the operation of the course, such as an inadequate record-system, or bad timing for radio programmes, these can be detected now. Secondly, you are testing the finished materials this time, not just a tentative first draft. So if you need to look closely at some particular aspect, such as whether your illustrations convey the intended meaning, you can include a suitable test in the pilot. And, thirdly, testing the course in 'real life', as it were, will enable you to look back to the original needs and objectives of the course which you defined in unit 4. This is most important, because, no matter how sound the materials may be in the abstract, they are only useful if they succeed in achieving the project's aims. Moreover, the pilot can also serve as a check on the aims and objectives themselves. So as well as asking 'do the materials meet the needs and objectives?' you can also ask 'were these the right needs and objectives?'

3.2 The results of a National Extension College pilot.

We can illustrate this last point by quoting the example of a

course run by the National Extension College. The course aimed to encourage primary schoolteachers to introduce practical science into their classes - something which few primary teachers in Britain are trained for, and which many ignore. The course outlined a number of suggestions for simple experiments, on the assumption that most of the teachers needed good, workable ideas, rather than scientific training. The pilot showed however that many of the teachers were dissatisfied with the course because it had underestimated their own wish to go deeply into the scientific background behind the experiments being suggested.

What would you expect to learn from the pilot project of your course, if there is one?

4. Reproducing materials

The way your course will be printed will influence to some extent how you write it. Three principal considerations are: paper size, typewriters, and the choice between reproducing materials on a duplicating machine or by offset.

4.1 Paper size

A4 size paper (210 x 297 mm; the same size as this page) has already replaced both foolscap (203 x 330 mm) and quarto (203 x 254 mm) size paper in many countries. Production of foolscap and quarto size paper may well cease altogether within a few years. It would therefore seem sensible to work with A4 and A5 paper sizes from the beginning. (A5 is exactly half the size of A4 and has the same ratio of height to width. For an example of two A5 size pages reproduced on one A4 sheet see Sample 14).

4.2 Typewriters

Electric typewriters are better, but more expensive, than manual typewriters because they apply the same pressure to every letter typed. This improves the quality of copies whatever method of reproduction is used.

There are basically two kinds of electric typewriter: those with a carriage and those without. Electric typewriters with a carriage resemble manual typewriters with the advantages that they are less tiring for the typist to use, and that the results look much neater. A carbon ribbon (essential for offset - see below) gives especially attractive results.

IBM and several other typewriter manufacturers make machines which do not have a carriage. Instead all the characters are on a small ball (termed a 'golfball' because of its shape and size) which moves across the paper, twisting as it does so to produce the characters corresponding to the keys which are touched. The main advantage of 'golfball' machines is that one can purchase balls with different type-faces and so give more variety to the printed materials. (Sample 19 makes use of only two type-faces but a very wide range are available, as well as two different type sizes. It takes only a few seconds to change from one golfball to another). Golfball typewriters are generally more expensive than those with a carriage.

If you are preparing a course which will make use of special symbols (such as mathematics) or in a language which employs special letters or accents, you will ideally want to have a typewriter available which is able to reproduce all of these. If you use an ordinary typewriter, someone will have to write in all the missing symbols by hand. However neatly this is done it is bound to look somewhat inferior (see Sample 15). If you have a typewriter (manual or electric) with a carriage, you could arrange for certain unwanted or little used characters (such as £, @, ! etc) to be replaced by some of the special symbols you need. This does not cost very much. However, if you are preparing a maths course, it is unlikely that the number of unwanted symbols will be as great as the additional symbols you require so some would still have to be written by hand. With a golfball machine, however, it is usually possible to buy a special ball which has on it all the symbols you will need. It would still be necessary to change the golfball every time you wanted to type one of these special symbols.

4.3 Duplicating machines vs offset

With a duplicating machine, ink passes through a stencil onto absorbent (duplicating) paper. The ink soaks into the paper and produces letters slightly larger than those originally typed. The letters are also a little blurred. If duplicating on both sides of a sheet of paper, the image from one side frequently shows through onto the other unless rather thick paper is used.

Duplicating machines use two kinds of stencil. Wax stencils can be typed on direct. They are tiresome to proof-read where corrections have been made since these can only be checked by holding the stencil up to the light. It is possible to make simple line drawings on such stencils but a lot of practice is needed in order to produce reasonably good results. Better but more expensive stencils can be produced on a machine which, in the Gestetner process, is called a Gestefax. The master is a typed sheet which may include simple line drawings. The master is attached to a drum while a plastic stencil is placed on a second drum. The image from the master is transferred to the plastic stencil. Some Gestefax machines are able to operate at different speeds and, at the slowest speed, can reproduce high contrast photographs as well as line drawings. However, note that it can take up to thirty minutes to make just one such stencil.

With offset, the master image is in carbon or indelible ink on a plate. The plate is alternately in contact with a water roller and an ink roller. Ink adheres only to those parts of the plate covered in carbon or indelible ink. The image from the plate is transferred in negative to a rubber blanket, and from the blanket, in positive, to paper. The amount of ink passing onto the paper is very much less than with a duplicating machine (about one tenth as much) and the paper need not be absorbent since the ink dries on the surface, thus producing more attractive results.

Offset machines use three kinds of plates. First there are direct image plates. These can be typed on a typewriter with

a carbon ribbon. They will also reproduce well drawings made in ball-point pen, pencil or indelible ink. Such plates are cheaper and easier both to proof-read and correct than wax stencils. They are suitable for runs of 500 or so. The other two kinds of plate (paper and metal) are made by a photographic process. Paper plates are suitable for runs of up to 2 000 and metal plates for up to 20 000. Metal plates can reproduce photographs well provided a special screen (for converting photographs into dots) is also used.

Offset equipment costs considerably more than duplicating equipment to purchase but it is less expensive to operate and gives better quality results. All the types of stencil and plates mentioned above can be stored and re-used later if needed.

4.4 Planning the layout

It is worth spending time considering what your materials will look like. You could start by looking at the samples booklet, and at any other distance teaching materials you can find. You may gain several good ideas about layout from these. Look particularly at examples where printing techniques similar to your institution's have been used.

What printing equipment does your institution use? How do you think these facilities will affect your writing?

EXERCISE A

Make some tentative decisions about the layout of your draft now. Indicate these in the text, in margins, or on a separate sheet.

5. Administration

The administration side of your unit is responsible for distributing the materials and for keeping appropriate records. It is a good idea to familiarise yourself with the systems used for both distribution and record-keeping. In particular, you certainly need to know what records are kept and how they are filed, as these records will provide an important source of feedback data later on.

If you are writing a correspondence course, you will also need to know the average turn-around time for assignments, that is, the time elapsing between the day the student sends off his assignment for marking and the day he gets it back. The point here is that students may not be able to continue working until the assignment is returned - either for psychological reasons, or sometimes because further work is based on the previous lesson. In maths courses, for example, it can sometimes be impossible for the student to continue before he is sure he has mastered the earlier steps. Of course, the administration is also responsible overall for getting the course operational. The moment when the course actually starts off is a crucial one, and a source of much difficulty. Writers are often closely involved in this process, though how far this is so varies from institution to institution.

6. Tutoring

Under this heading of tutoring we are including arrangements which involve field supervisors, group leaders or monitors as well as tutors - any personnel, in other words, who intervene between the providers of the course (you and your institution) and the users. You will need to know how these people are recruited, trained and supported. This is extremely important, as you must decide, on the basis of this information, what role they should have in your course. For example, if you are writing a correspondence course, find out how far tutors are likely to be able to cope with students' learning difficulties. If they can't be expected to do this for any reason, you will have to be very careful to predict these learning difficulties yourself, and write helpful explanations liberally into the course. You may also have to write supportive notes for the tutors. You should also try to find out roughly how much time tutors will have to devote to marking and commenting. If their time is limited, you may need to include more self-check questions in the body of the course, and cut down on the frequency and length of tutor-marked work. If you are writing study group materials, you may find that group leaders have not had extensive training in group management methods. In this case you will have to plan the group sessions in detail and give precise instructions to the leaders on how to implement the plan. This would include, for example, listing appropriate discussion questions. However, if you have been carefully through all the planning stages we described in unit 4, you will already have dealt with this matter.

What sort of tutors or other personnel will be used in your project? What role will they have, and how will you need to support them?

EXERCISE B

You may feel that, after considering these points, you need to include more self-check exercises, or perhaps that your group sessions need more detailed planning, or that some similar adjustment needs to be made. If so,do that now.

7. Evaluation

We have already considered the importance of pilots in terms of highlighting possible problems in a distance teaching project. In a moment we will turn to the question of pre-testing. Full-scale evaluation is a more complex subject however and here we give only a brief outline of two important aspects.

7.1 The scope of full-scale evaluation

Full-scale evaluation is similar to a pilot study but is more thoroughgoing. Pilot projects are usually restricted to a small number of participants, and so the results may prove to be unrepresentative. Different areas of the country may react in different ways to the same project; and administrative problems may become overwhelming when the project is expanded in size.

7.2 Evaluation is an on-going process.

Proper evaluation draws its information both from tests on specific aspects of the project and from continuing observation and recording. This means that continuous adjustments need to be made to the project - adjustments in the organisation and scope of the project, as well as revision of the actual materials. Financial considerations often operate here, as sometimes new project elements can only be introduced one at a time as funding allows. But other factors also change over time. Learners' needs shift over a long period, and projects must be responsive to developing educational requirements. Distance teaching materials can rarely be said to have been 'finished'. Distance education itself is evolving all the time; evaluation plays a vital part in monitoring unfolding needs and improved ways of meeting them.

8. Testing the draft

You have seen the draft through several revisions and rewritings, and you have now done as much work as is possible at this stage. But the way you have written the draft is based on assumptions about the characteristics of the learners. However carefully you have planned, some of your assumptions are bound to be wrong. It's important to test them out before producing a final version.

8.1 What will the test show you?

The test should give you a comprehensive picture of what is good and what is bad about your draft. You may have made some parts much too difficult, included material which students thought irrelevant, or left ambiguous instructions about what they should be doing. You may find that your illustrations were unclear or failed to get over the intended point. On the other hand, you will probably find some positive aspects, too, which you should build on in the later development of the materials.

8.2 What will you test your draft for?

In more detail, you will probably be testing the draft for most, if not all, of the following reasons:

- *Retention* (how much can learners remember?)
- *Understanding* both at the level of literal comprehension, and at a higher level of understanding.
- *Application and relevance* (i.e. have learners found it useful and interesting?)
- *Attitude change* (has the lesson stimulated learners towards new perceptions?)
- *Acceptability of materials* There are several aspects to this: Did learners enjoy working through the materials? Did they find them difficult, boring, irrelevant? Did tutorial and other staff find them satisfactory? Did the materials meet the objectives set for them?

Particular features There are bound to be some aspects of the draft that you have doubts about and thus want to test. You may be trying out a new technique and want to see how well it works, or you may be particularly anxious about a difficult message. You may want to test pictures or organise a readability test.

EXERCISE C

Write down the information you hope testing will give you.

8.3 What form will the test take?

A very simple test is to hand your materials to a group of colleagues and ask them to work through them. They will probably not be typical of your intended audience, so you should not accept all their comments uncritically. But they will at least be able to point out any obvious mistakes or problems. There will almost certainly be some, even with the most experienced writers. When the Botswana Extension College produced its course for agricultural youth clubs on fruit tree planting, it had no time to run a test in the field. Instead, a group of staff members tried to act out the instructions given in the booklet. They did this in their office, and used makeshift props - they found a real spade, but a broom took the place of a tree, and a bucket represented the hole into which it was planted! This impromptu test showed up a number of unsatisfactory features and the text was revised accordingly. We will shortly be helping you to do a similarly informal test on your own draft.

A more extensive test would require you to find a group of potential students and test their reactions to the materials. Finding the right group of people might be difficult, but you could try:

- approaching participants in a similar project or course which is already in operation;
- testing the materials on people who are not already learning but who have the characteristics of the expected readers;
- testing it out on some resident students at an education institution teaching the same course, if you have a good relationship with one.

Whoever you approach, you will be asking them to act as consultants, in a sense, so it is reasonable to offer them a small fee or perhaps to waive their enrolment costs.

When the participants in the test have worked through your draft, you must then assess their reaction to it.

8.4 Some possible approaches

- Testing participants to see how much they have learnt as a result of working through the material. Ideally you should ask the same set of questions both before and after the test, though this is not always practicable. In doing a test of this sort,

you will be trying to find out how much they have *retained*, *understood*, and can *apply* - often three quite different things which need different sorts of test.

This sort of test will probably be administered by a questionnaire, which will either be filled in by participants themselves or by trained interviewers. Whatever the case, the design of the questionnaire is obviously crucial and requires special skills. The questions must satisfy two particular requirements:

* Firstly, they must be intelligible to the participants so that they do yield the sort of information which you are seeking.
* Secondly, the design of the questionnaire must be easy to follow, so that participants and/or interviewers clearly understand what they have to do.

- Marking assignments and recording the marks, to see if any common patterns of difficulty emerge. You can also ask students participating in the test to submit their self-check questions for marking (which they would not normally do, of course). For non-correspondence materials, a parallel test could be done through observation. You would probably need a team of observers and you would have to give them a detailed schedule explaining precisely what points they are to look out for.

- Asking participants, either by questionnaire or in interviews, how they reacted to the materials - did they find them difficult? Boring? Incomprehensible? and so on. When assessing the test later, bear in mind that these are highly subjective reactions and will need to be supported by more objective data.

- Arranging personal interviews with learners, either individually or in a group. Be sure in this case that the people interviewed are reasonably typical and not too few, otherwise you can be misled.

- Outside assessment: For this you make materials available to people with experience of teaching the subject. You would ask them to comment both on the content of the lesson and on its presentation.

- Readability tests: These were mentioned in unit 3. Look back to page 30 for a checklist on text readability.

8.5 The writer's role in pre-testing

In running the pre-test, you will probably be working hand-in-hand with your editor. In fact, it is often at this stage that the

closest co-operation between editor and writer develops. The editor will be doing two things here: firstly, he or she will make whatever arrangements are necessary for the pre-test. This is not, generally speaking, the writer's responsibility, but you can help the editor by making suggestions about what questions you think the pre-test should answer. Secondly, once the results of the test are known, the editor will help you to analyse them and will guide you in making the necessary alterations.

As writer, it is a good idea for you to be closely involved in the test. You might find it instructive to take on the role of tutor, in appropriate cases, in order to see for yourself just how readers have reacted to your materials. At the same time, it is important to co-operate with an independent person as well (such as your editor or an independent assessor) who can look at the results more objectively than yourself.

Although questionnaire design is probably not part of your job, it will certainly be good experience for you to practise testing your own draft on some of your colleagues, or perhaps on a group of potential users if you can find one.

In a moment we will suggest that you draw up a questionnaire for your test. Make sure that your questions do elicit the information you set out in answer to the questions on page

EXERCISE C

Draw up your questionnaire

8.6 Carrying out the test

Having fixed the questions, the next step is to find someone to test it on. If you are following this manual in a group, set aside a group session for testing each other's drafts. If you are working individually, show the test to a colleague or someone who is representative of the learners your materials are designed for.

Usually in a pre-test the draft will be typed up before testing, and rough illustrations added. For this practice run, however, typing may not be necessary, provided that the copy is reasonably tidy and legible.

Carry out the test

8.7 What do the results show?

When the test has been completed, the next stage will be to interpret the results. This will lead you to make specific alterations in your draft; more importantly, perhaps, it will also lead you to question some of the assumptions you have made. Have you overestimated your readers' linguistic skills? Should you include more work for them to do? Were you right in your estimation of what they know of the subject already? So the

test may lead you to completely rethink your approach, as well as making changes here and there.

What results has your practice run produced? How do you interpret these results? What changes to your draft do they indicate?

This test has done no more than to give you some practice in the use of questionnaires for testing. For fully adequate results you will need the services of someone who will design a more thorough test and help you interpret it. But we hope you can see from this exercise what sort of information you can get through a pre-test and what sort of limitations it has.

9. Summary

In this unit we saw firstly how the various functions of a distance teaching unit need to be borne in mind while you are writing your course. In particular we looked at:

- the role of the editor and the sort of support this person will be able to give you, especially during the testing, piloting and revision stages;
- the kinds of printing techniques which your institution may use so that you can develop some preliminary ideas about layout;
- the administration and its effects on what your learners can be expected to do;
- the role of tutors in terms of the amount of support they can be expected to give learners and how much they will need themselves;
- tne arrangements for feedback and evaluation of your course.

You should now be ready to go ahead to a more thorough pre-test, and then to produce a revised draft ready for printing.

10. QUESTIONS FOR DISCUSSION

People working in groups are recommended to spend one or two sessions on testing each other's drafts. They should then discuss what they have each individually learnt about the materials they are working on from this exercise.

Groups should also discuss the following questions together. Individual writers are recommended to discuss these questions with members of staff at the institution to which they are attached.

1. What have you learnt about designing and using questionnaires? What sort of information can they provide, and what limitations should you be aware of?
2. Many different people are involved in producing and running courses - editors, planners, administrators, evaluators, tutors and learners themselves. In what ways should writers work with each of these?

3. In this manual we have taken you through the processes of planning, making drafts, testing and revising, processes which have by no means ended now that we have come to the end of the manual. How useful do you think the planning and preparation has been? What do you think your work has gained by it?

A final note

All that remains now is for you to carry on writing, and for us to wish you luck with your future work. We hope that you have found this manual a useful guide. Whether you have or not, however, we too need feedback and would welcome hearing from you, both about your views on this manual and about your experiences as a writer of distance teaching materials.
The address to write to is: International Extension College, 18 Brooklands Avenue, Cambridge, CB2 2HN, England.

SUPPLEMENT ONE : LEARNING THEORIES

After reading this section you should be able to decide, with reference to these notes, whether your materials provide suitable conditions for encouraging learning to take place.

1. The Process of Learning

Up to the seventies there were a number of theories of learning derived from observation of human performance in particular situations. All explained certain facets of learning helpfully, but none were comprehensive, although some claimed to be.

1.1 Information processing

During the seventies a new more comprehensive theory has emerged. This is known as the *information processing* theory of learning and memory. It breaks with the old tradition of deriving ideas from the performance of learners, concentrating instead on the internal processing of ideas and facts. It also incorporates the useful ideas of earlier theories rather than rejecting them.

Let us look at this theory in more detail.

Phases of learning

Stimulation	Something is presented to the learner which arouses his attention.
↓	
Registration of events	The stimulus is heard, seen or otherwise sensed by the learner.
↓	
Short-term memory storage	The stimulus is stored in a temporary memory bank, with limited capacity.
↓	
Long-term memory storage	The stimulus is transferred to long term memory. Here a process of selection and coding takes place.
↓	
Retrieval	A situation stimulates the learner to recall and reproduce the stored information.

1.2 How does this happen?

Learning takes place as a result of the interaction of external factors and internal processes. We do not know very much about the internal processes, but there are some important limiting factors to bear in mind:

- we are <u>selective</u> in our initial perception of a stimulus. Different people pick out different items as being important;
- short-term or 'working' memory has a limited time-span - 20 seconds maximum - and a limited capacity of five to nine items;

- people learn cognitive strategies (see below) to bring about the coding of information for storage. Without an appropriate strategy, efficient storage does not take place;
- it is not known to what extent long-term memory is permanent or whether some things fade away. But retrieval can only take place with an appropriate stimulus.

These points bring to the fore the importance of external factors in learning:

- the initial stimulus must draw the attention of the learner and focus his perception on the important points. Only a few points can be absorbed at any one time;
- coding is the critical event in learning. The way in which the stimulus is presented can suggest appropriate coding strategies;
- storage in memory can be affected by interference; for example, something irrelevant can distract you and create disorder in your memory;
- appropriate cues are invaluable for retrieval of information from long-term memory.

These points are probably difficult to take in. I suggest you leave them for now and reconsider them when you are actually engaged in composing or assessing teaching materials. We will look now at different ways in which learning is demonstrated.

2. Varieties of learning capability

It is helpful to classify different kinds of learning; most learning activities involve a combination of different capabilities.

2.1 Intellectual skills

In many ways these are the most important skills. Included here are discriminating, that is telling the difference between things, understanding concepts, that is the relationship between things, understanding rules, and also the combinations of rules. Reading, writing and the handling of number are all skills under this heading. These skills range from the very simple to the very complex.

2.2 Cognitive strategies

Little is known in detail about these. They are the procedures we use for ordering and processing information internally. They are learned over long periods. They apply to learning of all kinds, but each of us develops different strategies in accordance with the different types of learning stimulus we meet.

2.3 Verbal information skills

The ability to state ideas. This has to be developed to meet the needs of particular subject matter.

2.4 Motor skills

These are physical skills.

2.5 *Attitudes or Affective learning*

These are deep-seated and difficult to change. They determine our choice of personal actions. Our attitudes strongly affect our motivation for learning.

In planning a learning programme we need to consider how each of these different kinds of learning is involved, and provide conditions in which appropriate learning will take place.

3. Cognitive development

Each kind of learning includes simple and complex skills. How do we know what level of skill to expect of our learners? With motor skills, this is not such an important question, as people can easily display their present competence. But we need to look more closely at the question of attitudes, and for intellectual skills cognitive strategies, and verbal information - often grouped together and called cognitive learning. We should consider what is known as *cognitive growth or development.* We use this term to refer to the growth of mental processing capacity. There are two important strands of development.

3.1 *Biological growth*

We are born with a given amount of intelligence which develops naturally as we grow up in human society. The most helpful description of this development has been provided by Piaget, who sees cognitive growth as taking place in a number of stages. To start with, the young baby is entirely self-centred, and sees everything in relation to himself. Gradually he reaches a stage where he can think about objects he sees and knows and make relationships between them. Over the years a gradual transition takes place until he can think abstractly. This stage is generally reached soon after puberty.

3.2 *The effects of environment*

While this process of intellectual maturation is to a large extent biologically predetermined, the speed of the process and the direction it takes is affected by environment. An awareness of this is most important to educators. The objects around us in childhood and above all our general way of life determine what we think about. Schooling has a strong effect in stimulating development in certain directions. The variety of subject matters and the emphasis on verbalising responses develop particularly the ability to apply the same cognitive and intellectual skills in many different situations. People who have not been to school often find it more difficult to apply skills learnt in one situation to a new one. To help them learn we must therefore attempt to relate our materials to their personal experience, and help them to apply the skills they have by moving step by step from simple to more complex material.

There is also another side to this coin. Adults who have attended school for some years may also have difficulty in approaching entirely new subject matters, or even familiar ones, some years later.

They need help in retrieving skills or applying them in a new situation. A step-by-step approach starting from simple and familiar ideas will also be invaluable to them.

4. Attitudes

Very little is known about how attitudes change. There is, however, one very important point for us to consider. People are much more likely to consider a change of attitude if they respect or admire the person or people who propose a new approach. This suggests that in distance education either a face-to-face element or a popular and respected personality on radio or TV is essential for a significant change in attitudes to take place. Print alone is not enough. For the face-to-face element, however, it may not always be essential to involve a teacher or other authority figure. Adults discussing a topic together in a group may develop a new perception of a topic.

The sensitivity about attitude change implies that as educators we need to be aware of the accepted attitudes of learners towards controversial subjects. Do you know what attitudes your audience have to the topic you are planning to teach? If not, you need to consider what steps to take to investigate this.

5. The Practice of Education

To complete this section, we will look at some implications of what I have said to the practice of education, looking at two important approaches.

5.1 The systems approach

This approach is followed closely throughout this manual. It makes sense generally, and is particularly appropriate to the needs of distant learners. As it is fully covered elsewhere and applies the principles of learning outlined in this section, I will limit myself to two additional comments here. The development of this approach owes a great deal to the American educationist Robert Gagne. For the effective organisation of learning he has put emphasis on two important points:

- pay attention to the conditions in which a particular type of learning is most likely to take place. In other words, provide appropriate external stimuli to allow the internal learning processes to operate effectively;
- organise the material to fit with the events of learning. Take note of the processes that occur in the mind and organise the learning in small steps so that the learner is given the opportunity to process and reproduce each new bit efficiently.

5.2 The 'conscientisation' approach

This approach was developed by Paulo Freire in Brazil specifically for adults with no formal education. It gives priority to affective learning. The basic idea is that learning will not take place without

strong motivation. Learning therefore takes place in two stages. The first stage is consciousness-raising group discussion, which so alters the participants' perception of their lives that they develop the will to learn. Freire has used this process to stimulate the wish to learn to read by leading people through discussion to see that they share human culture with the elites in their country, but cannot communicate effectively with them or equal them in power without the cultural tool of literacy.

The second stage - that of learning the new subject - in this case reading - then follows naturally. The material is learnt quickly, partly because of the strong motivation to learn and partly because Freire has also developed a method which uses words which are centrally important in the lives of the learners as the key to literacy.

This approach depends very much on dialogue between the teachers and the learners. Only certain elements can be adapted to distance education. But it is useful to bear in mind that certain programmes may need just such an emphasis on motivation to be effective.

These approaches have an important common factor. In both it is centrally important to define and concentrate on the needs of the learner. The most important consideration to be derived from all work on learning theories is that the successful programme is one that is learner-centred rather than teacher-centred.

6. Summary

I wrote at the beginning of this section a statement which suggested we should aim at providing 'suitable conditions for encouraging learning to take place'. I hope it is clear now that this is the limit of what we can achieve. Theories of learning only answer some of our questions. They cannot tell us precisely how to ensure that learning takes place in each situation. We can only find this out by trial and error. However if you apply the ideas I have presented, your trials will at least be informed by the best theories available to us.

FURTHER READING

ROBERT M GAGNE, The Conditions of Learning. New York, Holt, Rinehart & Winston. Third Edition, 1977.

Most of the ideas in this section are taken from this book, which provides a summary of much work on learning theory as well as expanding on Gagné's own ideas.

BRUNER, J S, Toward a theory of instruction. Cambridge, Mass: Harvard University Press, 1966

The essays in this book discuss the relationship between cognitive development and the educational process.

FREIRE, PAULO, Education: The practice of freedom. London, Writers and Readers Co-operative, 1974.

This essay is the simplest statement of Freire's ideas. It includes an appendix presenting the stimulus pictures he used for 'conscientisation' in Brazil.

SUPPLEMENT TWO : BEHAVIOURAL OBJECTIVES

When you have read this, you should be able to explain why it is helpful to state behavioural objectives, and you should be able to formulate the objectives of your project.

1. What is a behavioural objective?

Imagine you have been given a bow and some arrows. You first learn to fit an arrow to the string and release it so that the arrow flies through the air. But you will not be satisfied that you can shoot until you can take aim and hit a target. You will set yourself a task to perform successfully, and you will evaluate your performance as you practise. You will gradually set yourself more difficult tasks until you are satisfied you can shoot as well as you want to.

Learning is similar. When we learn something, we have some criteria as to what is a satisfactory performance and we aim to achieve this. As a result of learning we can do something new. A statement of objectives informs us of what we should be able to do on completing a learning assignment.

Look at the beginning of each unit in this manual. You will see objectives stated there. They tell you what you will be able to do at the end of the unit.

'Are the objectives below stated in performance (behavioural) terms? Does each at least name an act the learner would be performing when demonstrating that he has achieved the objective?

		Yes	No
a.	To understand the principles of salesmanship	___	___
b.	To be able to write three examples of the logical fallacy of the undistributed middle	___	___
c.	To be able to understand the meaning of Ohm's Law	___	___
d.	To be able to name the bones of the body	___	___
e.	To be able to list the principles of secondary school administration	___	___
f.	To know the plays of Shakespeare	___	___
g.	To <u>really</u> understand the law of magnetism	___	___
h.	To be able to identify instructional objectives that indicate what the learner will be doing when demonstrating achievement of the objective	___	___

(from R F Mager: <u>Preparing instructional objectives</u> (1962), by kind permission of Fearon Publishers, Palo Alto, California.)

2. Why does a writer need to decide on objectives?

Different groups of people want to learn a particular subject for different purposes. Some people may want to learn a foreign language so that they can say and understand a few useful phrases

on holiday; others may want to learn that language for business purposes; others may want to become fluent in that language.

2.1 Defining your objectives

If you were a language teacher you would want to start by defining what your group of learners should be able to do on completing the course. When you have done this

- you will be able to decide on the structure and content of your course;
- at the end of the course, you will be able to evaluate from the learners' performance whether the objectives have been achieved.

Here is an example to think about: you are planning a course which leads to a school examination in French. One objective is that you want the learners to be able to pass the exam. But can you think of some more objectives you might have?

Here are several possibilities: you might want to be able to carry on a simple conversation about everyday matters in French; to be able to write a simple letter; or to be able to read a French newspaper.

Can you think of some more?

2.2 Teaching 'intangible' things

Some subjects don't seem to fit well with objectives. This is often the case with arts subjects, or where the teaching has to do with values.

But if you do not attempt to state objectives, how can you or the learners evaluate their performance?

You have a difficult task, but you can probably be more precise than you have been in the past.

2.3 Study skills

At school, we learn techniques for mentally processing and reproducing facts and ideas. Adults learning at a distance need help with such techniques, and we must remember to include them in our objectives. For example in a history examination course the learners will need to be helped first with the technique of taking notes efficiently. Then they will need to learn the skill of writing essays, moving gradually from writing one paragraph to planning and writing complete essays.

What study skills will learners need to develop in your course?

3. Why does the learner need to know his objectives?

Learning can be meaningless, and very boring, if you don't know why you are learning.

If you do know why, and the aim is one that you feel is important, then you will make more effort and learn better.

If you know what you are trying to achieve, then you will be better able to evaluate your own progress, and you will gain greater satisfaction when you have achieved your aim.

4. Should objectives for writers and learners be stated in the same form?

The idea behind stating objectives is the same in both cases, that both should know what they are aiming at. But in some subject matters if you are writing material which extends over several units a formal statement of all objectives may become repetitive. You may wish to present the objectives in a more conversational style.

Consider the ways you might present objectives in your own writing.

5. How do you set about stating objectives?

If objectives are to be precise enough to be really helpful to both writer and learner, you need first to think them out carefully and then to formulate them in suitable words.

Below you will find some hints on doing this.

5.1 Useful verbs

Some verbs point towards a precise performance:

to identify

to solve

to construct

to list

to compare

There are many more.

Some verbs are rather vague:

to know

to understand

to appreciate

You can use such words in stating objectives, but it will not be useful unless you also say how you intend learners to demonstrate their understanding or appreciation.

5.2 Conditions

Often you must specify the conditions in which the learner is to demonstrate his learning. Here are some phrases of the kind you might use:

given a list of ....

given a problem of the following class ....

given a standard set of tools ....

without the aid of references ....

5.3 Criteria of acceptable performance

You and the learner need to set a standard performance in many circumstances. This might be a time limit, for example

> "The student must be able to do such and such within fifteen minutes".

Or it might be a minimum number of responses or correct answers:

> "The student must be able to answer seven out of ten of the questions correctly".

Now look at some examples of objectives in distance teaching materials. (See samples 25,26 and 27). Consider whether these ideas are put into practice effectively, and whether you think they will be helpful to learners.

6. Assess yourself

Can you give two or more reasons why it is helpful to state behavioural objectives?

Can you state one or more objectives of your project?

If you still find this topic difficult, there is a very useful, and very short book on the subject:

ROBERT F MAGER, Preparing Instructional Objectives, Lear Siegler Inc/ Fearon Publishers, Belmont, California, USA 1962.

SUPPLEMENT THREE : MEDIA

When you have read this supplement you should have a clear picture in your mind about:

- *what we mean by educational media;*
- *what the different media and their functions are;*
- *the importance of using educational media in combination and the various ways of combining them.*

This account is not exhaustive, and you may be able to think of other ways of using them. As you read this supplement, keep thinking about how the remarks in it relate to your own work.

1. What are educational media?

An educational medium is a channel of communication which is or can be used in an educational programme. Our definition includes all and every form of communication, not just the 'mass media' of broadcasting and the press. For the sake of convenience we can divide the media into three main groups, consisting of *printed, broadcast, face-to-face communication,* and a fourth which comprises *diverse forms such as cassettes, films, slides etc.*

2. Characteristics of different media

2.1 Print

- varied forms, including correspondence courses, instructional booklets, work cards, programmed texts, newspapers and magazines, posters, flipcharts, comic strips.
- permanence is an important feature of print. This can be both an advantage (useful as reference) and a disadvantage (goes out of date soon, mistakes can't easily be rectified once printed).
- print is of limited use to illiterates.
- print is cheap to produce and can take advantage of economy of scale.
- newspapers are specially useful for:
  - * maintaining contact between scattered people (e.g. farmers, correspondence students)
  - * providing varied and interesting reading matter where books etc. are scarce
  - * providing a common focus of interest for a disparate group
  - * teaching, especially where other forms of instruction are difficult to arrange. (e.g. correspondence lessons in newspapers).
- posters and flipcharts may be the only visual media available for rural people. <u>But</u> these need to be used with care and to be well integrated with an associated verbal message.

comic strips are a way of presenting a message in the context of a story. Because pictures and written story run side-by-side, comics are readily understood by people with limited reading skills. These can be very popular, and effective in getting people to think about their attitudes. But they are no use unless readers are familiar with comic strip style. Furthermore a verbal story-line is essential. Comic strips do not work with pictures alone.

2.2 Broadcast media

Radio

- has enormous potential, can cover very large audiences and reach isolated spots. In practice, however, range is limited by technical problems and by social factors such as language.
- it has varied applications including:
  * support to correspondence students
  * classroom materials
  * basic education for rural families
  * information services of various kinds
  * information for listening groups
- it is ideal for communication with illiterates. Some evidence exists however that illiterates listen to educational radio less often than literates.
- radio is fleeting, in contrast to print. There is no permanence about it, but it is good for conveying impressions and for illuminating topics readers are already familiar with.
- radio is good at creating dialogue - either within a listening group, or between listeners and the programme organisers. Similarly, tutorial broadcasts can be made for correspondence students, responding to commonly felt difficulties.
- radio is important for breaking the isolation felt by many distant learners. And any sort of personal contact (even a voice on the radio) is crucial for bringing about changes in attitude.

Television

- problems of cost and maintenance inhibit the use of TV in many areas.
- features of TV are similar to those of radio, but visual element gives an added dimension, so
  * given a choice, people often prefer TV to radio, find it more interesting
  * TV makes it possible to use broadcasting for visual presentation (e.g. in geography or science subjects) which would otherwise have to be done in print.

2.3 Face-to-face contact

- even small amounts of face-to-face contact make distance

teaching more effective.

- face-to-face element is likely to be the most costly, so needs the most careful planning.
- face-to-face contact can be a very sensititve area. Some learners actually prefer impersonally presented information. And most can be put off learning altogether if they react adversely to the person concerned.
- we still know little for certain about what factors affect the quality of personal contact. What sort of people make the best communicators? How can we identify them? And how should they communicate? But we can say with reasonable certainty that
  - * people who are known and respected by the learners have the greatest influence when it comes to attitude change.
  - * it's sensible to make use of channels of communication which already exist (whether formal or informal) where these are appropriate, in preference to setting up new ones.

2.4 Other media

Cassettes are similar to radio; they have various disadvantages however:

- recurrent costs are higher than radio, therefore economies of scale are not possible
- cassette players and tapes usually need to be provided and distributed, while radios are usually already available. Cassettes are useful:
  - * where the number of listeners is too small to justify expense of radio broadcasts
  - * where radio transmission is not possible for technical or other reasons
  - * where the possibility of stopping and replaying tape is important for educational reasons
  - * in special cases such as language courses, where listeners can tape themselves.

Slides

- these are a simple form of graphic presentation. The main item of cost is taking the photographs, but the slides themselves are easy and cheap to make and put together. However they are more expensive than flipcharts, over which they have no significant advantage.

Films

- these are expensive to produce and difficult to get right for educational programmes. But they can add entertainment value when used alongside other elements.

Flannelgraphs

- cut-out cardboard pictures which can be fixed to a felt board. These are cheap and easy to produce and useful for group study. Their advantage over flipcharts and posters is that the pictures can be changed to suit the occasion. Pictures can be moved about by learners as well as by group leaders. These have been used effectively to help rural people define their own educational needs and priorities.

3. Combining the media

Combinations of media allow for the advantages of one to compensate for the disadvantages of another. They also allow learners a choice of learning styles.

There are no rules about how to combine media; the best way in any one case will depend on availability and suitability. So far we can pick out four broad types of combinations:

3.1 Information services

Information about practical household topics is abundant in the West in the form of magazines and information booklets of different sorts. But in many areas of the developing world, reliable factual information is not available though it is valued and sought after. This has encouraged numerous agencies to develop both printed and broadcast matter which is made available in a relatively unstructured way. Quite often these are designed in such a way as to be used either by already-existing groups in the community or by individuals using them on their own.

3.2 Combinations based on face-to-face programmes

Here broadcast and printed materials are designed to support face-to-face teachers, such as school-teachers or extension workers. Support materials may take the form of:

- materials used in the face-to-face training of these workers.

- materials designed to help and support them on the job.

- materials for them to distribute in their work or visual aids to support their educational activities.

3.3 Combinations based on print

These may be correspondence courses supported by broadcasts and/or tutorial support. Usually, written material provides basis of instruction while other media have supplementary role.

Broadcasts

- elaborating or giving practice in topics already covered in print.

- tutorial function, covering topics of common difficulty or giving information about seminars, exams etc.

- specific functions in certain subjects, e.g. radio for language practice, TV for demonstrating scientific experiments.

Tutors

- provide personal dimension, especially important for adults studying alone.

- help learners to assess own progress and advise on topics needing further attention.

- face-to-face meetings desirable wherever possible, in addition to postal tuition.

- study centres, and self-help study circles are important alternatives/additions to conventional tutorial arrangements.

Correspondence and broadcast materials are often used in schools and colleges where there are insufficient or inadequately trained teachers.

3.4 Combinations based on radio

There are basically 3 types of radio combination:

- *Radio forums* started in farming communities in Canada and were replicated in India and Ghana, amongst others. Here groups of people with a common interest in farming and related topics come together to listen to programmes and follow up with discussions and, hopefully, implementation of improved practices. They operate with or without the support of printed materials (usually without).

- *Radiophonic schools* have been in existence in Latin America for the last 30 years and there are now about 35 of them. They are mainly, but not all, run by church groups and are set up for the benefit of isolated rural families who have no other opportunities for bettering their standard of living. Usually the aim is to provide a basic primary equivalent curriculum, designed to suit the needs of rural people. However, there is a whole range of topics appropriate to the situation which is woven into this basic core.

  Groups often consist of whole families, including children, and are often led by the mother or elder sister. They are usually set up and encouraged by the local priest, or by a local organiser who works with him. Printed material ranges between straight textbooks, echoing the words of the radio, to pamphlets containing exercises to be done under the guidance of the radio presenter.

- *Radio campaigns* have been tried several times in both Tanzania and Botswana. They generally last about 10 weeks and deal with a specific national issue, leading it is hoped, to concerted action on a large scale. They have proved highly

successful in reaching very large numbers of people and in maintaining their interest over a short period. The usual pattern is for groups to listen to a programme and discuss topics set in an accompanying study guide. The group leader directs the discussion and writes down the group's response to the programmes which is sent to the organisers. Face-to-face support comes in the form of local extension agents and other community development personnel, whose services are recruited for publicity, selection of group leaders, distribution of materials, supervision of groups during the campaign, collecting reports, and any follow-up planned after.

EXERCISE A

Make an exhaustive list of all the possible media available to you. Include any of the media we have mentioned in this supplement, as well as any others you may think of.

EXERCISE B

Of the different types of media combination we have discussed here, which do you think is most suitable in your own project or institution? Work out the reasons for your choice.

SUPPLEMENT FOUR : SETTING A TEXT FOR READABILITY

This list is intended to help you in laying out a text. It is not meant to be a strict list of do's and don'ts as there will be times when you quite properly want to go against any one of these suggestions. But the list is of value as a general guide. If you just neglect one of these points it will not affect the readability to any great extent. If however you disregard all the points we mention then your text is likely to present difficulties to the reader.

1. Type style and size

1.1 The research suggests that serif type and sans serif type are equally easy to read. This manual is typed in serif face i.e. it has small serifs (or fine lines) projecting out from the main strokes of the letters. Sans serif face does not have these serifs and looks like this:

> **Some Aid Donors:** who wish to use their surpluses to manipulate world food markets and dislike aid that costs real money. Also they might not welcome the possibility of competitive food exporters in Africa.

1.2 There is now a great variety of typefaces available and probably little to choose between most of them on grounds of readability. If you find a typeface so odd that the letters could be confused with each other, avoid it.

1.3 Generally italic type is more difficult to read than upright so you should avoid long passages in italics. The comparative difficulty of italic can be turned to advantage: if you want to print answers to questions at the foot of the page, print them in italic upside down and they are very difficult to read without turning the book round.

1.4 Very small type is obviously difficult to read. But large type can also present difficulties if it is used for long passages. We read by scanning groups of words and large type prevents our doing this. For ordinary text - as opposed to headings or footnotes - avoid extra large or small type. 10 or 11 or 12 point is usually appropriate. If you want the page to look a little bit less dense you can have type of one size but with the spaces between the lines as they would be for the next size up:

It is too early yet to provide clear-cut answers. We have now completed just over two years of the project, and several students are still working. We are in the process of	Theme 10pt on 10 leading
It is too early yet to provide clear-cut answers. We have now completed just over two years of the project, and several students are still working. We are in the process of	Theme 10pt on 12 leading

1.5 Avoid very large spaces between lines as this slows down reading.

2. Type layout

2.1 Printed books have, until recently, usually been justified type - that is the right hand margin of the printed text is

a straight line, as well as the left. More recently, as a result of changes in printing technology, texts have often been produced with the right hand margin unjustified (as in this manual). If you are printing by offset lithography and setting type on a typewriter or compositor it is cheaper not to justify the right hand margin. Unjustified type has in some experiments been shown to be easier to read than justified. Some readers may, perhaps, find the reverse, especially if they are very used to justified margins. But with hesitant or unskilled readers you need have no hesitation in using unjustified text.

2.2 Line width is quite important. About 60 characters a line is about best. If you have many more characters than this, the eye can get lost in going on to the next line. Reading very short lines - of only three or four words - is also more difficult and slower.

2.3 Words should be spaced evenly. In typescript, one space is enough between words, or after punctuation.

2.4 Unnecessary or meaningless punctuation should be avoided. No full stops, for example, should be used after page or section headings.

2.5 Try to avoid splitting words at the end of a line: unless the word is very long it is usually better to have it all on one line or the next, rather than to split it with a hyphen.

2.6 There are two conventions for marking paragraphs off from each other. Either indent a new paragraph by the width of two letters or do not indent at all but leave one blank line between paragraphs. Do not do both. Where a new paragraph begins under a subheading, do not indent the first word in any case.

2.7 Headings should catch the eye and it is therefore best to use distinctive print for them - ideally something slightly bigger and bolder than the rest of the text but otherwise similar.

2.8 The width or narrowness of margins do not seem to affect readability. So go by convenience and aesthetics in deciding how wide to make the margins, leaving the space you think necessary for binding, for ease in holding the book or for readers' notes.

3. Page layout

3.1 As paper is increasingly being sold in the A series of sizes, you will often be faced with a choice between printing on A4 (the size of this manual, 210 x 297 mm) or A5 (148 x 210 mm, or half this size). The mathematical and economic joy of the A series of sizes is that each size is half as big as the next and the ratio of the two sides is constant at $1:\sqrt{2}$. Thus, in cutting paper, there is no wastage and the proportions are the same for A0 as for A1, A2, A3, A4 and so on.

A5 will give you a convenient, pocketable book but you may have difficulty if you want to fit complex diagrams on to the page. A4 gives you more space to play with on the page. But, if you use type 10 point in size, or either of the standard typewriter sizes of print, you will get far more than 60 characters to the line if you print right across an A4 sheet. For better readability, use only part of the width of the paper, if you can afford to give away that much blank paper, or can use it for headings, notes or diagrams.

3.2 Normally text is printed this way up. If you swing the page through 90° (so that it is in 'landscape' form) you can print two columns side by side and can vary the width of these. This can be a major advantage for bilingual texts if the same content takes up more space in one language than the other. If you were printing Setswana and English side by side, for example, you would need a wider column for the Setswana than for the English. If you were printing Swedish and English side by side, the English would need the wider column.

3.3 Pictures should be near the text which refers to them.

4. Numbers

4.1 In sentences, it is usually easier for readers if numbers are given in figures rather than words. Many publishers use words for numbers up to ten and figures above that.

4.2 Avoid Roman numerals.

4.3 Numbers for paragraphs or sections can help the reader to find his way about. But if the numbering system is very complex, they will confuse rather than help.